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Biological Services Program

FWS/OBS-78/10
August 1979

An Ecological Characterization Study Chenier Plain Coastal Ecosystem of Louisiana and Texas

COMPLETED
ORIGINAL

VOLUME II
APPENDIXES

Interagency Energy-Environment Research and Development Program

OFFICE OF RESEARCH AND DEVELOPMENT
U.S. ENVIRONMENTAL PROTECTION AGENCY
AND
Fish and Wildlife Service

U.S. Department of the Interior

The Biological Services Program was established within the U.S. Fish and Wildlife Service to supply scientific information and methodologies on key environmental issues that impact fish and wildlife resources and their supporting ecosystems. The mission of the program is as follows:

- To strengthen the Fish and Wildlife Service in its role as a primary source of information on national fish and wildlife resources, particularly in respect to environmental impact assessment.
- To gather, analyze, and present information that will aid decisionmakers in the identification and resolution of problems associated with major changes in land and water use.
- To provide better ecological information and evaluation for Department of the Interior development programs, such as those relating to energy development.

Information developed by the Biological Services Program is intended for use in the planning and decisionmaking process to prevent or minimize the impact of development on fish and wildlife. Research activities and technical assistance services are based on anaysis of the issues, a determination of the decisionmakers involved and their information needs, and an evaluation of the state of the art to identify information gaps and determine priorities. This is a strategy that will ensure that the products produced and disseminated are timely and useful.

Projects have been initiated in the following areas: coal extraction and conversion; power plants; geothermal, mineral, and oil-shale development; water resource analysis, including stream alterations and western water allocation; coastal ecosystems and Outer Continental Shelf development; and systems inventory, including National Wetland Inventory, habitat classification and analysis, and information transfer.

The Biological Services Program consists of the Office of Biological Services in Washington, D.C., which is responsible for overall planning and management; National Teams, which provide the Program's central scientific and technical expertise and arrange for contracting biological services studies with states, universities, consulting firms, and others; Regional Staff, who provide a link to problems at the operating level; and staff at certain Fish and Wildlife Service research facilities, who conduct in-house research studies.

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August 1979

AN ECOLOGICAL CHARACTERIZATION STUDY OF THE CHENIER PLAIN COASTAL ECOSYSTEM OF LOUISIANA AND TEXAS

VOLUME II

APPENDIXES

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PREFACE

The purpose of this ecological characterization was to compile existing information about the biological, physical, and social sciences for the Chenier Plain of Louisiana and Texas. Decisionmakers, among others, may use this report for coastal planning and management. This is the first in a series of characterizations of coastal ecosystems that will be produced by the U.S. Fish and Wildlife Service. Future studies will include the sea islands of Georgia and South Carolina, the rocky coast of Maine, the coast of northern and central California, the Pacific Northwest (Oregon and Washington), the Mississippi deltaic plain, and the Texas barrier islands.

Funding for this study was provided through the Interagency Energy/Environment Research and Development Program, which is planned and coordinated by the Environmental Protection Agency Office of Energy, Minerals, and Industry. Inaugurated in FY75, this program serves to coordinate the efforts of 77 Federal agencies and departments to provide environmental data and technology for the protection of natural resources which may be threatened by the development of domestic energy sources.

Any suggestions or questions regarding this publication should be directed to:

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This report should be cited:

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An Ecological Characterization Study
# of the
Chenier Plain Coastal Ecosystem
# of Louisiana and Texas

6.0 INTRODUCTION

An ecological system or ecosystem is a complex of plants and animals interacting with one another and with their habitat or physical environment. Man, too, is an integral part of the ecosystem and his actions and activities influence, and are influenced by, other processes and components. Only when man understands how ecosystems operate will he be able to improve his management of natural resources and guide developments generated by his social and economic systems.

An ecological characterization study describes the important components and processes of an ecosystem and provides an understanding of their interrelationships by synthesizing and integrating existing physical, biological, and socioeconomic information. The main purpose is to provide an information base to aid in evaluating human impacts on the ecosystem and to provide an ecological framework for guiding resource management and coastal planning.

The Chenier Plain in southwestern Louisiana and southeastern Texas is a relatively large coastal ecosystem created by 5,000 years of sediment deposition from the Mississippi River. This ecosystem was selected for study because of its biological diversity, valuable fish and wildlife resources, and its proximity to actual and proposed oil and gas production activities.

The contents of the Chenier Plain Ecological Characterization are organized into three volumes. Volume I is a narrative report containing a description and analysis of climatic, geomorphic, and functional processes that formed, or are changing, the Chenier Plain ecosystem. Descriptions of the drainage basins, habitats, and some of the most important animal species are presented.

Volume II (Appendixes), in five parts, generally is a continuation of the elements of Volume I. Part 6.1 contains geological, hydrological, meterological, chemical, biological, and socioeconomic data sources. Part 6.2 describes socioeconomics, oil and gas production, agricultural values, sport and commercial fisheries, fur trapping, and waterborne transportation. Part 6.3 gives biological information about primary production, waterfowl, fishes, and a habitat/species list. Part 6.4 contains data about water discharges, phosphorus levels, and habitat changes. Literature sources for the appendixes are listed in Part 6.5.

Volume III (Atlas) consists of the following eleven plates (maps):

1. Plates 1A and 1B–Index Maps
2. Plate 2–The Pleistocene Erosional Surface
3. Plates 3A and 3B–Chenier Plain Habitat Groups
4. Plates 4A and 4B–Chenier Plain Wetland Habitats
5. Plates 5A and 5B–Canals and Point Source Discharges
6. Plates 6A and 6B–Special Features (bird-nesting colonies, archeological sites, refuges and oyster reefs)

The letter "A" denotes the western portion of the Chenier Plain, and "B" denotes the eastern portion.

The Chenier Plain Characterization is intended for users having a moderate understanding of socioeconomic and ecological principles, and a concern about resource management or coastal planning problems.

APPENDIX 6.1. CHENIER PLAIN DATA SOURCES

The following table contains an annotated list of ecological studies in the Chenier Plain region, both published and unpublished. In general, the list is confined to primary data sources, as contrasted to reports that summarize data from other reports. However, some of the latter are included, where they appear to be particularly useful. The references are listed alphabetically within each major subject area. Complete citations to published works are listed in Appendix 6.5.

Appendix 6.1(1). Chenier Plain data sources - geology, geography, and physiography.

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
Anderson and Clark 1977	Shoreline Changes	Nearshore Gulf, Beach, Galveston County, Texas	Published	Variable			
Barrett 1971	Sedimentology, Hydrology, and Water Quality	Louisiana Coast	Published 1968-1969			Monthly	
Benefield 1976	Shell Dredging, Oyster Fishery	Reefs and Inland Open Water	Published		Varies		
Espey, Huston and Assoc. 1976	Dredged Material Placement; Navigation Development	Wetlands, Canals	Published		Every 2 miles on dredged waterways - varies		Dredging frequency and disposal statistics of major channels and canals (quality and quantity).
Feray 1965	Beach Erosion	Nearshore Gulf, Beach, Marsh, Bolivar Pass Area	Published Abstract Paper unpubl.	Intermittent 1930-1961	2	Intermittent (from maps)	Paper on effects of Hurricane Carla presented at Geological Society of America Meeting in 1965.
Hill and Masch 1969	Shell Dredging	Reefs	Published				
Jaworski 1971	Shoreline Change	Texas Chenier Plain	Published				Wave heights in Nearshore Gulf
Masch 1967	Shell Dredging	Reefs	Published				
Morgan and Larimore 1957	Shoreline Changes	Nearshore Gulf, Beach, Marsh Louisiana Coast	Published	1932-1954	108 in Chenier Plain	2 time periods 1932 and 1954 (from photos)	
Morton 1975	Shoreline Changes	Texas Chenier Plain	Published				

continued

Appendix 6.1(1). Continued

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
Nichols, N. G.	Depth to Pleistocene Surface	Wetland Habitats	Privileged	1	>100	Single temporal	Louisiana only
Seeling and Sorensen 1973	Shoreline Changes	Nearshore Gulf, Beach, Marsh Texas Coast	Published	Variable	54 in Chenier Plain	2 time periods (from maps)	
Texas General Land Office 1978	Maps	Texas Coast Bays, Lakes, Islands	Unpublished (see Literature Cited)				State-owned tracts plotted on 7½ minute USGS maps and reduced to 8½ by 11
U.S. Bureau of Mines 1965	Mineral Inventory (survey)	Sabine Basin	Published				
U.S. Geological Survey	Orthophoto Quads.		Advanced	1974	46 in La. portion of Chenier Plain		Scale 1:24,000 used as base maps for Habitat Inventory
U.S. Geological Survey	Topographic Sheets		Published	Variable	91 maps for Chenier Plain Area	Variable	Used as base maps. Scale 1:24,000 for Habitat Inventory
U.S. Soil Conservation Service 1935	Soil Types	Coastal Wetlands and Barrier Islands Galveston County	Published				
U.S. Soil Conservation Service 1965	Land Use, Soil Types	Texas Chenier Plain	Published				
U.S. Soil Conservation Service 1975	Erosion Control	Gulf and Bay Shorelines	Published				

continued

Appendix 6.1(1). Concluded

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
U.S. Soil Conservation Service 1976	Soil Types	Marsh, Rangeland, Bays, Chambers County	Published				
U.S. Soil Conservation Service 1977	Soil Surveys	Texas Chenier Plain	Published				Mapped data (soil types)

Appendix 6.1(2). Chenier Plain data sources - hydrology.

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
Barrett 1970	Acreage of Water Bodies	Coastal Louisiana	LWF Report				
Brandes, R. J. et al. 1975	Hydrologic Model	Sabine Lake	Published				
Bureau of Commercial Fisheries 1969	Hydrography	Galveston Bay	Published	Varies	Varies		
Forrest and Cotten, Inc. 1958	Hydrologic	Sabine River	Published				
Forrest and Cotten, Inc. 1960	Hydrology	Sabine River Watershed	Unpublished (See Literature Cited)				
Forrest and Cotten, Inc. 1962	Hydrologic	Sabine River	Published				
Forrest and Cotten, Inc. 1963	Hydrologic	Sabine River	Published				
Forrest and Cotten, Inc. 1967	Hydrologic	Sabine River	Published				
[1]National Oceanic and Atmospheric Administration	Water Level	Nearshore Gulf Open Water	Through Agency		1	Continuous	
Prather, S. H. and R. M. Sorenson 1972	Tidal Pass Stability	Rollover Fish Pass, Bolivar Peninsula	Published				
Sabine River Authorities of Texas and Louisiana 1963	Hydrology	Sabine Basin	Published				

continued

Appendix 6.1(2). Concluded

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
Texas Water Development Board 1973	Fresh Water Inflows	Galveston Bay	Published				
Texas Water Development Board 1977	Hydrologic; Surface and Ground Water	Each River Basin in Texas	Published	Various	Varies	Varies	
Tracor, Inc. 1971	Hydrology and Water Quality Modeling	Galveston Bay	Published				
U.S. Army Corps of Engineers, New Orleans Dist.	Water Level	Open Water all Major Streams	Through Agency and Storet	1929-present variable with station	11	Continuous	Many Data Gaps
U.S. Army Corps of Engineers 1968	Hydrology	Sabine River	Published				
U.S. Economic Development Administration 1972	Hydrology	Sabine Basin	Published				
U.S. National Marine Fisheries Service 1971	Hydrology Water Quality	Galveston Bay	Published	107	Varies	Monthly	
U.S. Soil Conservation Service 1954	Water Management	Sabine, Neches, Calcasieu, and Mermentau River Basins	Unpublished (see Literature Cited)				
Wax, C. L. 1977	Climate/Water level interactions	Coastal Louisiana	LSU[1] Library Drost Abstracts, Ann Arbour, Mi				Analysis of water level gauge records from USACE

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[1] Louisiana State University

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Appendix 6.1(3). Chenier Plain data sources - meteorology.

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
Cry 1965	Hurricanes 1872-1964		Published	Summary of all Hurricanes in North Atlantic 1872-1964			Published References
Ho and McLaughlin 1976	Solar Radiation, Cloud Cover		Published	1951-1975	1	Summary of Published Data	
Muller and Larimore 1975	Water Budget		Published	1941-1970	All in Louisiana	Summary of Published Data	
National Weather Service, U.S. Department of Commerce	Freeze Days		Environmental Data Service Asheville, N.C.	Variable with Station	6	Reported Daily	Second Order Stations
National Weather Service, U.S. Department of Commerce	Temperature and Precipitation		Environmental Data Service Asheville, N.C.	Variable with Station	15	Reported Daily	Second Order Stations
National Weather Service, U.S. Department of Commerce	Freeze Days		Environmental Data Service Asheville, N.C.	1941-1970	16	30 yr Summary	
National Weather Service, U.S. Department of Commerce	Temperature and Precipitation Dewpoint, Relative Humidity Solar Radiation	Lake Charles Louisiana	Environmental Data Service Asheville, N.C.	1941-present	1	3-Hourly	First Order Station
National Weather Service, U.S. Department of Commerce	Adjusted Pan Evaporation	Catfish Point, Louisiana	Environmental Data Service, Asheville, N.C.	1952-present	1	Daily	Location: Catfish Point, Louisiana
Bureau Land Management, USDI 1974	Hurricanes		EIS	1965-75	Hurricane Paths Plotted on Map	3-Hourly	Reference Cited Section
Wax 1976	Synoptic Climatology of Lake Charles Louisiana		Through Author Unpublished	1971-1974	1	3-Hourly	Reference Cited Section

Appendix 6.1(4). Chenier Plain data sources - chemistry.

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
Blakely, and Skinner 1973	Water Quality	Sabine River	Published		Various	Monthly	
Brupbacher et al. 1973	Chemical Properties of Soil	Louisiana Wetlands	Published	Aug. 7-Aug 22, 1968	366 samples	Once	Same Sample Sites as Chabreck's Vegetation Samples
Diener 1975	Water Chemistry Land Use	Texas Chenier Plain	Published	Various	Many	Various	Compilation of Data from Many Sources
Domingue et al. 1975	Point Source Discharges, Water Quality	All Chenier Plain Basins in Louisiana	Published	Secondary Data			
Holiman (n.d.)	Water Quality	Sabine River	Published				
Huston 1974	Water Quality	Galveston Bay	Published		5 segments		3 Stations in East Bay
Louisiana Department Public Works 1969-1974	Water Availability and Water Quality	Whole Louisiana by Parish	Published	Secondary Data			
Louisiana State Department of Health 1972	Oyster and Water Quality	Calcasieu Lake	Published	1971	25	2 times over 1 week	
Louisiana State Planning Office 1975	Land Use	All Louisiana Parishes	Published				Land Use by Parish
Louisiana Wildlife and Fisheries Commission (n.d.)	Water Quality	Inland Open Water Nearshore Gulf	Privileged	Variable	Many	Variable	

continued

Appendix 6.1(4). Continued

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
McCarley 1975	Water Quality	Sabine River	Published				
Shampine 1971	Drainage Area and Discharges	Sabine Louisiana	Published	Secondary Data			
Sloss 1971	Water Quality	Major Lakes, Louisiana	Published	Various			
Storet (EPA)	Water Quality	Louisiana and Texas	Storet	Many	Many	Various	Water Quality Data from Many Sources
Texas Department of Health Resources Estuarine Water Quality Survey	Water Quality	Texas Coast	Unpublished Available through Agency	1958 to present	16 in Sabine L. 16 in East Bay		Contact: Richard Thompson, Dept. of Health Resources, Austin, Texas 512/458-7510
Texas State Department of Health 1959	Hydrology Water Quality	Sabine and Neches Rivers	Published				
Texas State Department of Health 1968	Water Quality	Galveston Bay	Published	Over 4	180	Monthly	8 Stations in East Bay
Texas Univ. Ctr. for Research in Water Resources 1964	Historic Data Water Quality	East Bay	Published	Varies, Days to 23 years (1951-1964)	4 to 25	Varies	Summarizes Measurements by Various Agencies
Texas Water Development Board 1975	Nutrient Exchange	Sabine Basin Bayous, Marsh, Canals	Published		5	Hourly	
Texas Water Quality Board 1970	Water Quality	East Bay	Published				

continued

Appendix 6.1(4). Continued

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
Texas Water Quality Board 1974	Water Quality	Sabine River	Published				
Univ. of Tex. Mar. Sci. Inst. 1973	Toxicity, Freshwater Inflows, Photosynthesis	Galveston and East Bays	Published	2	5	Varies	One Station in East Bay
U.S. Army Corps of Engineers, New Orleans District	Salinity	Inland Open Water Nearshore Gulf	Through Agency	Variable with Station	Many	Continuous to Annual	Many Data Gaps
U.S. Army Corps of Engineers, New Orleans District	Salinity	Inland Open Water Nearshore Gulf	Through Agency	Variable with Station		Daily	Many Data Gaps
U.S. Army Corps of Engineers, New Orleans District	Salinity	Inland Open Water Nearshore Gulf	Through Agency	Variable with Station		Weekly to Annual	
U.S. Environmental Protection Agency 1972	Point Source	Calcasieu Basin	Published	1971	Variable	Once	
U.S. Geological Survey 1977 (and earlier years)	River Discharge	All Major Streams in Louisiana	Published	1935 to present	Variable	Continous to Monthly	
U.S. Public Health Service 1952	Water Quality	Sabine Basin	Published				

continued

Appendix 6.1(4). Concluded

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
Weston, R. F., Inc. 1974	Point Source Discharge	Calcasieu Basin	Published		Various		Much Data from USGS 1971 and EPA 1972
Woolf and Vidrine 1976	Agricultural	Southwest Louisiana	Published				Primary Economic Data

Appendix 6.1(5). Chenier Plain data sources - biology - multiple species.

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
Louisiana Department of Wildlife and Fisheries, 1975 and earlier	Biological Information	Louisiana Coast	Published	Varied			Biannual Reports
Texas Parks and Wildlife Department	Biological Information	Texas Coast	Coastal Fisheries Project Reports; Available Through Agency	1959 to present	10 in East Bay	Monthly	
Texas System of Natural Laboratories, Inc Austin, Texas	Biological, Socioeconomic and Related Information	36 Coastal Counties, Texas	Unpublished Available from from Agency				Reports and Charts for 1200 Spp. of Mollusca, Sea Grasses, Algae, Grasses, Archeology, etc.

Appendix 6.1(6). Chenier Plain data sources - biology - wetland flora.

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
Adams 1956.	Vegetative Composition	Rockefeller Wildlife Refuge	LSU[1] Library (Microfilm)				
Chabreck 1960	Vegetative Composition	Rockefeller Wildlife Refuge	Published	1959	753	Once	Line Transects
Chabreck 1960	Species Present Relative Abundance	Wetland	Most is published. Unpublished - privileged. Source: Author, School of Forestry, LSU	1967	15 Aerial Transects	Single Temporal	Transects are at 7.5' Long. Intervals. Gound Sampling at 2 Mile N-S Intervals.
Chabreck 1968a	Cattle and Marsh Vegetation	Marsh Island	Published	Began 1958	19	August of each year	8 Transects per Station
Chabreck et al. 1968b	Changes in Vegetation after Impoundment	Louisiana Wetlands	Published			Review of Data	
Chabreck 1970, 1972	Plant Species Composition and Vegetative Coverage	Entire Louisiana Coast	Ph.D. Dissertation, LSU Library[1] and published (1972)	August 1968	39 Transects	Once	
Dodd and Webb 1975	Shoreline Stabilisation with Vegetation	East Bay	Published				
Farlow 1976	Plant Species	Intermediate Marsh North of Mermentau River	Ph.D. Dissertation LSU Library[1]	1974-1975	2 Plots		
Hoffpauir 1961	Vegetation Density (Dry Weight, Mositure, No. Stems)	Rockefeller Wildlife Refuge	Published	October 1960-February 1961			Measuring Effects of Marsh Land Flows

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[1] Louisiana State University

Appendix 6.1(6). Continued

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
Hoffpauir 1968	Effect of Burning on Vegetation Composition		Published				Review of Data
NASA, Slidell, La.	Species Present Relative Abundance	Wetland Habitats	Through Agency	1975-1976	42	Single Temporal Study	Louisiana Only
Palmisano 1967	Growth Requirements Vegetative Composition	Cameron Parish & Rockefeller Wildlife Refuge	M.S. in LSU[1] Library	June 1965-June 1967	3 in Chenier Plain		Field and Laboratory Work
Palmisano 1970	Ecological Factors Influencing Distribution of Marsh Plants	Coastal Louisiana	Ph.D. in LSU[1] Library and Dissertation Abstract	1967	3 in Chenier Plain	Once	40 Total Transects in State
Perry et al. 1970	Vegetative Composition	Rockefeller Wildlife Refuge	Published	1958-1969			
Ross 1972	Survival and Growth Factors of *S. olneyi*	Rockefeller Wildlife Refuge	M.S. in LSU Library	Feb. 1971-June 1972	Various	Various	Tank Studies - Plots Established in Various Marsh Types and in Various Treated Areas - Also Feeding Experiments with Nutria
Singleton 1948	Waterfowl Food Plant Production, Waterfowl Food Habits	East Texas Gulf Coast	Texas A&M Library				
Soileau 1968	Vegetative Response to Various Treatments	Price Lake Area of Rockefeller Wildlife Refuge	M.S. in LSU[1] Library	Nov. 1966-1968	112 plots	Quarterly	

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[1] Louisiana State University

continued

Appendix 6.1(6). Concluded

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
Spindler and Noble 1974	Fall Vegetation	Spoil Bank Grand Chenier	Published	1973	270	September October	Circular Plots
U.S. Fish and Wildlife Service	Plant Succession After Mortalities Due to Hurricane Audrey	Fresh-Intermediate Marsh	Through Laccasine National Wildlife Refuge or J. Valentine USFWS, Lafayette, La.	1958-1972	3	11 times	Aerial Transects
U.S. Soil Conservation Service 1972	Species Present Relative Abundance	Wetland	Through Agency	1	57	Single Temporal Study	Cameron-Creole Watershed Project

Appendix 6.1(7). Chenier Plain data sources - biology - plankton and benthic algae.

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
Denoux 1976	Biomass of Phytoplankton and Zooplankton	Inland Open Water Nearshore Gulf	M.S. Thesis LSU[1] Library	1.5	10	8 times/year	
Gillespie 1971	Species Relative Abundance Seasonal Distribution of Zooplankton	Inland Open Water and Nearshore Gulf of Louisiana	Published	April 1968 - March 1969	28	Monthly	
Kaprau 1974	Benthic Marine Algae	Inland Open Water and Nearshore Gulf					
Louisiana Department of Wildlife and Fisheries	Trawl Samples and Net Samples	Inland Open Water and Nearshore Gulf of Louisiana	Through Agency Unpublished Data		Varies		

[1] Louisiana State University

Appendix 6.1(8). Chenier Plain data sources - biology - invertebrates.

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
Adkins, G. 1972	Blue Crab, Salinity Ranges, Habitat Description, Bottom Type, Food, Population Dynamics	Wetland, Inland Open Water, Nearshore Gulf	Published--Data Included	1	22	Monthly	Otter Trawl, Plankton
Conner 1977	The Crab Harvest by Basin (1977)	Wetland, Inland Open Water, Nearshore Gulf	Unpublished--Available thru Author, CWR,[1] LSU[2]	0			Literature Review
Dugas 1973	Species Composition and Distribution of Blue Crabs in SW Louisiana (1973)	Wetland, Inland Open Water, Nearshore Gulf	Unpublished, Available thru LDWF	1/2	14	Random	Digging, by Hand, Seine, Dip Net
Gary 1974	Crawfish Distributions, Historical, Habitat, Lifecycle, Aquaculture, Socioeconomic Factors, Processing	Wetlands	Published				
	Crawfish Distributions	Wetlands	Published				
Hofstetter 1977	Oyster Biology	Galveston Bay	Published	11	Varies	Varies	
Louisiana Department of Wildlife and Fisheries	Shrimp (including statewide salinity and temperature)	Inland Open Water Nearshore Gulf	Privileged Through Agency	1966-	8	Variable Mostly Spring and Fall	Statewide: Trawl

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[1] Center for Wetland Resources

[2] Louisiana State University

continued

Appendix 6.1(8). Concluded

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
Louisiana Department of Wildlife and Fisheries, Oyster Division	Oyster Location	Inland Open Water	Privileged Through Agency	1976	5	1	Survey of Calcasieu Lake
U.S. Nat. Marine Fisheries Service, U.S. Dept. of Commerce	Gulf Coast Shrimp Data	Inland Open Water Nearshore Gulf	Through Agency	1959		Reported Monthly	By Inland Estuary and Offshore Zone
U.S. Nat. Marine Fisheries Service U.S. Dept. of Commerce	Gulf Coast Menhaden Data	Inland Open Water Nearshore Gulf	Through Agency	1952-1972		Reported Monthly	
Parker 1970	Brown Shrimp Distribution	Galveston Bay	Published				Related to Salinity and Hydrography
Penn 1959	General Crawfish	Wetlands	Published	Unknown	NA	Unknown	Seine, Traps, Dip Net
Texas Parks and Wildlife Department	Oyster Location	Inland Open Water	Privileged Through Agency	20	4	Variable	Survey Includes all of East Bay
U.S. Environmental Protection Agency 1971	Shellfish Pollution	Galveston Bay	Published	Varies 1-10	Varies	Monthly to Annually	

Appendix 6.1(9). Chenier Plain data sources - biology - herpetofauna.

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
Chabreck 1966	Size and Composition of Alligator Population	Wetland Rockefeller Wildlife Refuge	Published				Observations
Chabreck 1965	Aligator Movements	Wetland Rockefeller Wildlife Refuge	Published	1962			Found Several Animals Suffocated Due to Freeze up in Marsh
Chabreck 1971	Alligator Foods and Feeding Habitats	Fresh and Salt Marsh Rockefeller Wildlife Refuge	Published	August 1967		Once	Analysis of Stomach Contents
Chabreck 1973	Temperature Variation in Alligator Nests	Wetland Rockefeller Wildlife Refuge	Published	1961-1968	3 nests	Continuous	Thermometer
Dundee, H. A. and D. A. Rossman	Point Records of Reptiles	Various, All Habitats	Privileged, through authors at Dept. of Zoology, LSU[1] and Dept. of Biology, UNO[2]	50			
Giles and Childs 1949	Alligator Food Habits	Wetland Sabine National Wildlife Refuge	Published				Stomach Analysis
Joanen 1969	Alligator Nesting Ecology	Wetland Rockefeller Wildlife Refuge	Published	1964-1968	11 nests		Observations

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[1] Louisiana State University

[2] University of New Orleans

continued

Appendix 6.1(9). Continued

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
Joanen and McNease 1970	Distribution and Movements of Nesting Female Alligators	Wetland Rockefeller Wildlife Refuge	Published	18 May 1969 - 10 November 1969	5 animals	411 fixes on 118 days	Radio Telemetry
Joanen and McNease 1971	Captive Propagation of Alligators	Wetland Rockefeller Wildlife Refuge	Published				Observations
Joanen and McNease 1972a	Distribution and Movements of Adult Male Alligators	Wetland Rockefeller Wildlife Refuge	Published	14 April 1971- 18 March 1972	14 animals	569 fixes 339 days	Radio Telemetry
Joanen and McNease 1972b	Salinity Tolerance of Young Alligators	Wetland Rockefeller Wildlife Refuge	Published				Observations
Joanen et al. 1974	Alligator Harvest Analysis and Population Estimates	Wetland Rockefeller Wildlife Refuge	Unpublished (See Lit. Cited)	1970-1974		Yearly	Nest Counts by Air Transects
Joanen and McNease 1975	Reproductive Biology and Captive Propagation of Alligators	Wetland Rockefeller Wildlife Refuge	Published	4.5 years 1969 thru 1974	26 animals		Observations
Joanen and McNease 1976	Alligator Culture in Controlled Chambers	Rockefeller Wildlife Refuge	Published				
La. Dept. of Wildlife and Fisheries	Alligator Nest Survey	Wetland Rockefeller Wildlife Refuge	Privileged, See Linscombe LDWF[1]	5	29 aerial	1	Transects Every 3.75' Longitude

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[1] Louisiana Department of Wildlife and Fisheries

continued

Appendix 6.1(9). Concluded

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
La. Dept. of Wildlife and Fisheries 1966-1967	Bullfrog Habitat Description	Wetlands	Published Data Included	One	Random	Unknown	By Hand or Snare
La. Dept. of Wildlife and Fisheries	Alligator Population Estimates	Wetland	Unpublished Available from Joanen, LDWF[1]	1975			Nest Counts by Air Transects
McNease and Joanen 1974	Distribution and Movements of Immature Alligators	Wetland Rockefeller Wildlife Refuge	Published	27 March 1973-5 March 1974	30 animals on 148 days	1,100 fixed	Radio Telemetry
Palmisano et al. 1973	Alligator Harvest Analysis and Population Estimates	Wetland	Published	1970, 1972			
Reggio 1967	Bullfrog Food, Pigfrog Food Requirements	Wetlands	Unpublished Available thru LSU Library	Unknown		Random	Caught by Hand or Snare
Valentine et al. 1972	Alligator Food Habits	Wetland Sabine National Wildlife Refuge	Published				Stomach Analysis

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[1] Louisiana Department of Wildlife and Fisheries

Appendix 6.1(10). Chenier Plain data sources - biology - fish.

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
Arnold et al. 1960	Fish and Other Biota	East Lagoon and Galveston Island, Texas	Published				
Christmas and Etzold 1977	Menhaden Management Plan	Gulf of Mexico	Published				
Conner and Truesdale 1973	Fish Abundance Catch/Effort	Trinity River Delta	Published	March 1966-February 1969	17	Twice Monthly	
Copeland and Bechtel 1971	Fish Environmental Limits	Galveston Bay	Published				
Fore 1970	Menhaden Spawning	Offshore	Published				
Galloway and Strawn 1974	Fish Seasonal Abundance and Distribution	Galveston Bay	Published				Sampled at a Hot Water Discharge
Gunter 1945	Fish Numbers, Species, Mass Distribution, Seasonal Cycles, Reaction to Salinity	Coparo Bay, Aransas Bay, and Gulf of Mexico, Texas Area	Published	April 1941 - August 1942	31	Monthly	
Gunter and Shell 1958	Fish Distribution	Mermentau River Basin, Grand Lake, White Lake and Little Bay	Published	September 1951 June 1953	8	Every 3 to 5 Months	Trawl and Minnow Seine
Herke 1968	Effects of Weirs on Fishes and Crustaceans	Grand Bayou	Published	January 1971-June 1971	10	Monthly	Surface Trawl, Otter Trawl, Trammel Nets, Rotenone, Crab Traps

continued

Appendix 6.1(10). Continued

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
Herke 1971	Use of Natural and Semi-impounded Marshes as Fish and Crustacean Nurseries	Marsh Island	Ph.D. LSU[1] Library and Dissertation Abstracts	May 1967-February 1968	2	Monthly	
Kroger and Pristas 1975	Menhaden Migrations	Offshore	Published				
Lindall et al. 1972	Fishery Data by Hydrologic Unit	Louisiana Coastal Zone	Published				Riview of Data
Matlock and Weaver 1978	Fish Abundance	Inland Open Water, Near-shore Gulf	Published	5 months	11 in East Bay, 3 in Sabine Lake		
Moore et al. 1970	Relative Abundance, Seasonal Distribution, Species Composition of Fish	Offshore La. and Texas	Published				
Parker 1965	Fish Checklist	Galveston Bay	Published				
Perret et al. 1971	Distributions	Louisiana Estuaries	Published	1	122	Monthly, some bi-weekly	Otter Trawl, Beach Seine
Perry 1976	Standing Crops	Rockefeller Wildlife Refuge	Published				
Perry 1976	Fish Populations	Rockefeller Wildlife Refuge	Published	5	12	Single Temporal Study	Rotenone and Trawl Sampling

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[1] Louisiana State University

continued

Appendix 6.1(10). Concluded

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
Reid 1955	Species and Numbers of Fish Length-Frequency Distributions	East Bay, Texas	Published	June 1954-July 1954			Otter Trawl, Minnow Seine, Bag Seine
Reid 1956	Fish Populations	East Bay, Texas	Published	June 1955			78 Collections with Otter Trawl, 3 with Trammel Net, 18 with Minnow Bag
Reid et al. 1956	Food Habits of Fish	East Bay, Texas	Published				
Stickle et al. 1975	Fish Populations	Nearshore Gulf	Privileged - Through Author, Dept. of Zoology, LSU[1]	1	10	8	
Texas Game, Fish, and Oyster Commission 1932	Fishes of Texas	Texas	Published				
Texas Parks and Wildlife Dept. 1973	Research and Management Program	Texas	Publeihed				
Texas Parks and Wildlife Dept. 1975	Fishery Resource	Galveston Bay Oyster Reefs and Marshes	Published				
Turner 1966	Distribution and Abundance of Fishes	Lacassine and Sabine Natl. Wildlife Refuges	LSU Library	September 1964-May 1966	6		Electrical Shocking Mechanism, Rotenone, Gill and Trammel Net

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[1] Louisiana State University

Appendix 6.1(11). Chenier Plain data sources - biology - mammals.

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
Atwood 1950	Nutria Life History	Various	Published				
Kays 1956	Nutria Ecology	Wetlands	M.S. Thesis LSU[1] Library	1			350 Nutria Captured at Price Lake, La.
Lowery 1974b	Life Histories, Geographic Ranges of all Mammal Species		Published				
Murry 1970	Deer, Squirrel	Various	Available Through R. Murry Baton Rouge, La.				
O'Neill 1949	Muskrat Life History, Mostly Non-quantitative	Various	Published				
Palmisano 1972a	Muskrat Aerial House Counts and Waterfowl Surveys	Fresh Marsh Salt Marsh	Published	3	Chabreck's Transects	1 year	Aerial Counts
Palmisano 1972b	Muskrat Densities	Wetlands	Published	2.5	15 Aerial Transects	2 year	
Texas Parks and Wildlife, Dept.	Muskrat Densities	Wetlands	Through Agency	2	12 Aerial Transects	1 year	Murphree Wildlife Mgmt. Area Compartmentalized for Study

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[1] Louisiana State University

Appendix 6.1(12). Chenier Plain data sources - biology - birds.

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
Able 1972	Magnitude, Timing and Direction of Fall Passerine Bird Migration		Published	3 months	1	Nightly	Radar
Audubon Christmas Bird Counts	Species Present	Wetland, Upland	Published	77	4	Single Temporal Study	
Chabreck 1962	Waterfowl Population and Use of Impoundments	Rockefeller Wildlife Refuge	Published				Review of Rockefeller Impoundment Use
Chabreck et al. 1974	Canada Geese	Rockefeller Wildlife Refuge	Published	1960-1973	4 Enclosures		Looked at Nesting
Gauthreaux, S.A. 1971	Magnitude, Timing and Direction of Fall Passerine Bird Migration		Published	3 months	1	Nightly	Radar
Glasgow and Bardwell 1962	Teal Food Habits	Wetland Ridge	Published	1	None		
Glasgow and Junca 1962	Mallard Food Habits	Wetland Ridge	Published	1	None		
Glazner 1946	Food Habits of Geese	Texas Gulf Coast	Published	1939-1943	117 Gizzards		Also Includes Field Data
Harmon et al. 1960	Waterfowl Foods	Rice Fields of Southwest Louisiana	Published	Nov. 1958-Feb. 1959	9 Farms	Once a Month for 3 Months	20 Samples per Field
Kimble and Ensminger 1959	Duck Food Following Hurricane	Southwest Louisiana Marshes	Published				

continued

Appendix 6.1(12). Continued

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
La. Dept. of Wildlife and Fisheries, New Orleans, La.	Aerial Waterfowl Counts	Wetland Agriculture	Privileged Available from H. Bateman	8	15 Aerial Transects		Transects Same as as Chabreck (1968)
La. Dept. of Wildlife and Fisheries, 1961	Waterfowl Populations	Louisiana Wetlands	Published				
La. Wildlife and Fisheries Commission, New Orleans, La.	Waterfowl Kill Surveys	Louisiana Coast	Available from Agency	1968-1974 1975-1976			
Lowery 1974a	Bird Life History, Distribution, Seasonal Patterns	All Habitats	Published				
McIntire et al. 1975	Landing Areas of Spring Trans-Gulf Migrants		Published	3	1 Lake Chares	Nightly	Radar
Murry 1970	Dove, Quail Information	Not Specific	Available through R. Murry				
Portnoy 1977	Wading Bird Rookeries	Louisiana Coasts to GIWW	Published	1	15	Single Temporal Study	Stations = Rookeries
Rogers and Korschaer 1966	Foods of Lesser Scaups	1 Site Near Grand Chenier	Published	1959	17 Stomachs		

continued

Appendix 6.1(12). Concluded

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
Sanderson (ed) 1977	Migratory Shore and Upland Game Birds	Includes Chenier Plain	Published				
Schroer and Chabreck 1974	Snow Geese	Sabine and Anahuac National Wildlife Refuges	Published	Winter 1972-1973	1,592 Geese Banded		Visual Observations of Banded Geese

Appendix 6.1(13). Chenier Plain data sources - socioeconomics.

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
Breuer et al. 1978	Sportfishing Catch and Effort	Sabine Lake	Published	1974-1975			
Corty 1972	Agriculture	Coastal Louisiana	Published				
Fielder and Guy 1975	Agriculture	Louisiana	Published				
Heffernan et al. 1977	Sportfishing Catch and Effort	Galveston Bay	Published	1974-1975	Variable	26 Days each Quarter	
Holtzapple 1976	Archeological Sites	Sabine Pass Area	Published				
La. Dept. of Cons. 1977	Oil and Gas Extraction	Louisiana	Published	1974	By Field		
La. Dept. of Wildlife and Fisheries, New Orleans, La.	Fishing, Trapping, Hunting Licenses, Trapping Statistics	Louisiana	Available through Agency	Yearly			
La. State Parks and Recreation Commission, 1974	Parks, Golf Courses, Marinas, Boat Ramps, etc.	Louisiana	Maps Available through Agency	Current to 1974			Plotted on La. Highway Maps @ 1 inch = 2 miles
La. State Parks and Recreation Commission 1974	Sportfishing and Hunting Participation	Louisiana	Published				Telephone Survey

continued

Appendix 6.1(13). Continued

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
Lindell et al. 1972	Fishery Catch	Northern Gulf of Mexico by Grid Zone	Unpublished Available from USAE, NOD (See Lit. Cited)				
Melancon (ed) 1977	Oil and Gas Production	Louisiana	Published	1974	By Field		
Railroad Commission of Texas 1974 (and earlier)	Oil and Gas Extraction	Texas	Published	Annual	By County		
Smith, L. 1970	Economics	Galveston Bay	Published				
Texas State Dept. of Highways and Public Transportation 1976	Manufactures and Employers	Along GIWW	Published				
Texas University Bureau of Business Research 1972	Resources	Galveston Bay	Published				
Texas Water Quality Board 1969	Land Use	East Bay Area	Published				
U.S. Army Corps of Engineers, New Orleans District, Fish and Wildlife Study	Comprehensive	Mississippi River Delta	Unpublished Available from Agency				

continued

Appendix 6.1(13). Concluded

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
U.S. Army Corps of Engineers 1976	Waterborne Transport	Gulf Coast	Published				Annual Summary
U.S. Department of Agriculture 1975a	Agricultural Economics	Louisiana and Texas	Published	1974	By Parish		
U.S. Department of Agriculture 1975b	Recreation Use/Demand	Texas River Basins	Published				
U.S. Department of Commerce 1973	Population	Louisiana and Texas	Published	1970	By Parish, and Subunits, Urban and Rural		
U.S. Department of Commerce 1975	Employment	Louisiana and Texas	Published	1973	By Parish		
U.S. Department of Commerce 1976a	Fishery Landings	Louisiana and Texas	Published	1975 and Earlier	By Estuary and Grid Zone		
U.S. Department of Commerce 1976b	Federal Spending	Louisiana	Published	1976	By Parish		

Appendix 6.1(14). Chenier Plain data sources - comprehensive studies impact analysis.

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
Ecology and Environment, Inc. 1977	Vegetation Zones, Communities Soils	Sabine Pass Area	Published		10		Total Organic Carbon, Phosporus, Nitrogen Analyses
Fisher et al. 1972, 1973	Land Use Water Quality	Marsh, Rangeland, Bays	Published				Contains Mapped Information Based on Varying Amount and Times of Data Acquisition
James et al. 1977	Water Quality	GIWW, Texas	Published	3 months	15	Monthly: January, May, August	Heavy Metals, Water and Sediment Analyses
McGowen et al. 1977	Species Diversity, Sediment Analysis, Geochemical Mapping	Texas Bays and Nearshore Gulf	Published	3	3,197 Bays 3,500 Gulf		Comprehensive
Rice Center for Community Design and Research 1974	Environmental Analysis	Many Habitats	Published				Contains Lists of Species by Habitats
Southeast Fisheries Center, USDC, NMFS, 1977	Environmental Assessment of Buccaneer Oil Field	Nearshore Gulf	Unpublished	1-2	Varies	Daily and Monthly	
Texas General Land Office 1974	Annotated Bibliography Of Research	Varies	Published				
Texas Parks and Wildlife Dept. 1972	Park Plan	Marsh, Aquatic, Sabine Pass	Published				

continued

Appendix 6.1(14). Concluded

Data Source	Type of Information	Site and Habitat Specificity	Availability	Years of Sampling	No. of Stations	Frequency of Sampling	Sampling method and Other Comments
Texas Water Development Board 1973	Hydrography Biology	Texas Bays	Published	Varies	By Bay		9 Stations East,Bay Divided into Five Segments
Texas Water Quality Board 1970	Ecological	Galveston Bay	Published	1	Varies	Varies	
U.S. Army Corps of Engineers 1952	Navigation Channels	Sabine, Neches Waterway	Published				
U.S. Army Corps of Engineers 1966, 1967	Land Use Hydrology	Sabine River Basin	Published				
U.S. Army Corps of Engineers 1975	Channelization Dredging	Marsh Spoil	Published				
U.S. Soil Conservation Sarivce 1976a	Environmental Assessment	Marsh, Lake - Keith Lake Area	Published				
Wiersema et al. 1973	Ecological Study	Sabine River, Marsh, Spoil Banks	Published	10 months	11	Monthly	Seine, Trawl, Gill Net, Benthos, Plankton, Physical/Chemical Data

APPENDIX 6.2 CHENIER PLAIN SOCIOECONOMIC DATA

Appendix 6.2(1). Louisiana oil and gas production from individual oil fields, by basin, in 1974 (Melancon 1977)

Basin and Field	Inshore zone	
	1974 Production[1]	Field Cumulative total
VERMILION		
Nunez		
Condensate[1]	——	348
Natural Gas	——	754,029
Perry		
Condensate	16,245	227,557
Natural Gas	2,478,261	35,930,267
Perry, South		
Condensate	——	10,496
Natural Gas	——	301,372
Esther		
Condensate	9,701	449,526
Natural Gas	898,001	33,200,066
Esther, SW		
Crude	——	2,547
Condensate	17,933	591,082
Natural Gas	1,908,839	56,801,503
Theall		
Condensate	7,820	588,446
Natural Gas	2,307,446	88,552,648
MERMENTAU		
Chalkley, West		
Condensate	——	432
Natural Gas	——	122,529
Florence		
Crude	22,321	158,723
Condensate	4,769	1,542,358
Casinghead Gas	10,255	82,889
Natural Gas	1,010,398	69,620,195
Florence, East		
Crude	——	62,268
Casinghead Gas	——	32,555
Gueydan		
Crude	422,493	31,390,259
Condensate	1,653	462,697
C.T.C.	——	17,409
Casinghead Gas	423,743	24,627,891
Natural Gas	210,450	19,813,280
Gueydan, Southeast		
Condensate	316,063	1,531,499
Natural Gas	9,598,575	67,360,218

continued

[1] Crude oil and condensate in barrels; natural gas, casinghead gas, and C.T.C. in mcf.

Appendix 6.2(1). Continued

Basin and Field	Inshore zone	
	1974 Production	Field Cumulative total
Gueydan, SW		
Condensate	80,421	243,045
Natural Gas	3,759,853	11,487,289
Gueydan, West		
Crude	228,444	10,562,075
Condensate	399,585	2,378,005
C.T.C.	31,825	1,128,759
Casinghead Gas	265,331	25,996,664
Natural Gas	12,288,949	155,795,290
Lacassine Refuge		
Condensate	271,103	2,183,574
Natural Gas	4,278,718	29,570,891
Lake Arthur, East		
Condensate	——	22,255
C.T.C.	10,010	277,431
Natural Gas	920,285	19,963,440
Lake Arthur, South		
Condensate	238,293	1,263,790
C.T.C.	27,338	206,383
Natural Gas	15,607,190	73,669,355
Lake Arthur, Southwest		
Crude	33,949	147,254
Condensate	37,745	1,255,151
Casinghead Gas	40,369	277,438
Natural Gas	5,740,118	87,494,347
Lake Arthur, West		
Crude	10,088	884,192
Condensate	16,306	1,001,354
Casinghead Gas	2,049	853,361
Natural Gas	1,447,298	48,487,721
Lakeside		
Crude	——	441,941
Condensate	103,436	4,218,803
Casinghead Gas	——	745,842
Natural Gas	4,156,390	250,153,474
Mulvey		
Crude	3,949	450,067
Condensate	(64)	195,790
Casinghead Gas	130,888	1,046,784
Natural Gas	——	4,321,877
Niceville		
Crude	7,807	157,274
Condensate	——	37,536
C.T.C.	105,772	2,938,764
Casinghead Gas	4,776	365,697
Natural Gas	2,795,437	71,182,757
Niceville, South		
C.T.C.	——	6,551
Natural Gas	——	50,362

continued

Appendix 6.2(1). Continued

Basin and Field	Inshore zone	
	1974 Production	Field Cumulative total
Sweet Lake, North		
Crude	12,187	117,549
Condensate	8,882	54,122
Casinghead Gas	8,723	230,111
Natural Gas	64,038	439,008
Thornville, South		
Crude	——	48,185
Condensate	364,973	13,208,316
Casinghead Gas	——	277,868
Natural Gas	31,970,894	586,875,431
CALCASIEU		
Bayou Coupique		
Crude	5,356	97,529
Condensate	——	33,795
Casinghead Gas	2,640	120,108
Natural Gas	——	3,364,495
Lake Charles		
Condensate	6,798	135,691
Natural Gas	294,411	5,654,835
Lockport		
Crude	267,477	30,660,658
Condensate	7,687	764,925
Casinghead Gas	254,362	14,443,688
Natural Gas	312,425	25,261,227

continued

Appendix 6.2(1). Continued

Basin and Field	Intermediate zone	
	1974 Production	Field Cumulative total
VERMILION		
Bancker		
Crude	78,742	2,557,681
Condensate	——	175,698
Casinghead Gas	1,947	734,442
Natural Gas	——	10,139,807
Buck Point		
Condensate	187,200	4,067,904
Natural Gas	8,721,108	135,278,407
Buck Point, East		
Crude	14,096	2,181,215
Condensate	32,689	722,555
Casinghead Gas	14,840	6,069,889
Natural Gas	1,393,992	20,707,620
Buck Point, North		
Condensate	60,573	244,550
Natural Gas	1,148,157	4,397,876
Fresh Water Bayou		
Crude	——	57,882
Condensate	53,123	2,227,752
Casinghead Gas	——	316,714
Natural Gas	2,691,700	153,937,536
Fresh Water Bayou, North		
Crude	——	10,151
Condensate	477,677	6,208,605
Casinghead Gas	——	18,274
Natural Gas	26,040,052	314,919,269
Hell Hole Bayou		
Crude	16,847	331,485
Condensate	240,969	2,125,300
Casinghead Gas	17,541	774,260
Natural Gas	4,227,319	35,558,757
Intercoastal City		
Crude	41,055	400,513
Condensate	(520)	874,616
Casinghead Gas	286,063	1,896,850
Natural Gas	——	27,270,244
Redfish Point		
Crude	351,981	2,371,829
Condensate	206,728	3,998,019
Casinghead Gas	1,556,856	7,601,801
Natural Gas	7,764,439	126,480,671

continued

Appendix 6.2(1). Continued

Basin and Field	Intermediate zone	
	1974 Production	Field Cumulative total
MERMENTAU		
Fire Island		
Condensate	334	165,471
Natural Gas	47,616	10,370,451
Florence, South		
Crude	66,087	395,439
Condensate	—	378
Casinghead Gas	75,229	269,930
Natural Gas	—	21,222
Lac Blanc		
Crude	—	318,463
Condensate	401,287	5,821,643
Casinghead Gas	—	1,913,315
Natural Gas	17,292,146	318,680,082
Outside Island		
Crude	—	399,911
Condensate	—	33,463
Casinghead Gas	—	525,457
Natural Gas	—	855,182
White Lake, East		
Crude	2,000,248	41,763,057
Condensate	3,901	480,309
Casinghead Gas	1,438,590	28,490,834
Natural Gas	558,280	36,851,469
White Lake, North		
Condensate	—	111,314
Natural Gas	—	5,779,623
White Lake, West		
Crude	958,677	15,018,052
Condensate	176,661	5,503,288
Casinghead Gas	905,369	14,448,227
Natural Gas	7,119,275	267,512,315
Big Lake		
Crude	117,707	9,772,744
Condensate	26,442	1,890,477
Casinghead Gas	159,531	14,883,542
Natural Gas	1,383,903	75,707,765
Chalkley		
Crude	29,415	13,645,360
Condensate	66,201	2,342,749
Casinghead Gas	148,226	38,098,300
Natural Gas	7,665,055	267,168,361
Cheniere Perdue		
Crude	28,153	202,714
Condensate	22,511	988,988
Casinghead Gas	53,276	614,880
Natural Gas	1,114,815	27,667,583
Deep Lake, North		
Crude	—	26,272
Condensate	18,700	350,628
Casinghead Gas	—	255,308
Natural Gas	1,688,363	23,354,091

continued

Appendix 6.2(1). Continued

Basin and Field	1974 Production	Intermediate zone Field Cumulative total
Grand Lake		
Crude	627,118	29,016,532
Condensate	24,698	701,498
Casinghead Gas	961,422	31,966,732
Natural Gas	1,516,964	53,138,989
Lake Misere		
Crude	——	86,545
Condensate	——	112,479
Casinghead Gas	——	66,863
Natural Gas	——	5,614,912
Lake Misere, South		
Crude	——	6,935
Condensate	59,606	843,639
Casinghead Gas	——	2,942
Natural Gas	26,371,953	229,913,343
Little Cheniere		
Crude	——	10,121
Condensate	63	29,134
Casinghead Gas	——	23,063
Natural Gas	49,197	489,374
Little Cheniere Ridge		
Crude	——	27,238
Casinghead Gas	——	6,664
Mallard Bay		
Crude	——	476,418
Condensate	8,201	1,148,077
Casinghead Gas	——	175,174
Natural Gas	1,070,916	44,415,812
Pecan Lake		
Condensate	46,820	3,075,151
Natural Gas	5,172,823	291,984,823
Pecan Lake, South		
Crude	30,043	928,337
Condensate	82,178	5,683,477
Casinghead Gas	55,908	3,399,754
Natural Gas	18,533,617	547,165,489
Sweet Lake		
Crude	905,239	31,497,997
Condensate	820	11,795
Casinghead Gas	529,612	10,960,567
Natural Gas	39,534	1,939,848
Twin Island		
Crude	5,193	390,078
Condensate	40,758	1,162,395
Casinghead Gas	63,130	3,948,932
Natural Gas	4,315,334	82,058,587
High Island		
Crude	——	505
Condensate	12,991	514,882
Casinghead Gas	——	25,665
Natural Gas	706,682	18,361,770

continued

Appendix 6.2(1). Continued

Basin and Field	Intermediate zone	
	1974 Production	Field Cumulative total
CHENIER RIDGE		
Pecan Island		
Condensate	1,231,702	5,756,553
Natural Gas	126,368,853	610,863,479
Pecan Island, North		
Condensate	——	20,653
Natural Gas	——	1,833,397
Big Mouth Bayou		
Condensate	411	13,115
Natural Gas	191,249	2,101,804
Cheniere Perdue, East		
Crude	45,977	439,092
Condensate	——	66,953
Casinghead Gas	6,931	74,747
Natural Gas	——	9,688,526
Cheniere Perdue, West		
Condensate	(332)	24,159
Natural Gas	11,213	1,419,486
Constance Bayou		
Condensate	349	1,630,195
Natural Gas	96,252	45,464,523
Crab Lake		
Crude	27,977	188,759
Condensate	917	524,101
Casinghead Gas	——	115,156
Natural Gas	79,370	21,713,484
Creole, South		
Condensate	507	57,542
Natural Gas	58,269	4,977,674
Deep Lake		
Condensate	246,503	10,679,440
Natural Gas	18,136,290	821,585,894
Grand Cheniere		
Crude	25,414	670,627
Condensate	161,558	2,630,244
Casinghead Gas	26,704	3,392,294
Natural Gas	8,100,222	127,788,423
Grand Cheniere, South		
Condensate	27,586	795,605
Natural Gas	4,808,780	90,708,317
Hog Bayou		
Crude	51,556	1,255,684
Condensate	——	453,211
Casinghead Gas	——	2,474,303
Natural Gas	——	37,265,947
Kings Bayou		
Condensate	157,085	1,734,074
Natural Gas	9,879,352	145,488,824

continued

Appendix 6.2(1). Continued

Basin and Field	Intermediate zone	
	1974 Production	Field Cumulative total
Little Pecan Lake		
Crude	20,288	465,621
Condensate	135,404	2,176,518
Casinghead Gas	25,783	8,944,118
Natural Gas	8,431,089	124,621,445
Mud Lake, Lower		
Condensate	——	272,574
Natural Gas	——	13,386,659
Price Lake		
Crude	——	2,845
Condensate	21,509	644,650
Casinghead Gas	——	13,835
Natural Gas	734,070	18,254,076
Second Lake		
Condensate	——	2,385
Natural Gas	——	1,177,542
CALCASIEU		
Calcasieu Lake		
Crude	20,106	263,285
Condensate	——	13,740
Casinghead Gas	242,516	1,447,278
Natural Gas	——	3,911,297
Calcasieu Pass		
Crude	——	228,158
Condensate	35,427	599,212
Casinghead Gas	——	211,361
Natural Gas	2,770,932	39,612,513
Cameron		
Crude	202,861	1,882,474
Condensate	240,560	4,985,010
Casinghead Gas	447,598	2,222,166
Natural Gas	6,440,391	260,603,652
Choupique		
Crude	52,946	798,929
Condensate	——	175,475
Casinghead Gas	161,782	1,887,570
Natural Gas	——	10,895,137
Grosse Savanne		
Crude	——	122,656
Casinghead Gas	——	38,500
Hackberry, East		
Crude	1,736,848	93,484,158
Condensate	354	112,932
Casinghead Gas	932,771	59,840,423
Natural Gas	59,137	6,431,009
Hackberry, West		
Crude	2,884,531	117,688,660
Condensate	19,176	105,888
Casinghead Gas	2,604,637	97,790,353
Natural Gas	1,128,243	8,228,030

continued

Appendix 6.2(1). Continued

Basin and Field	Intermediate zone	
	1974 Production	Field Cumulative total
Holly Beach		
Condensate	2,791	700,762
C.T.C.	——	92,218
Natural Gas	538,966	59,650,069
Holly Beach, East		
Condensate	13,719	36,365
C.T.C.	——	307,005
Natural Gas	3,453,126	38,238,941
Lake Charles, South		
Crude	50,033	1,588,844
Condensate	105,388	1,532,062
Casinghead Gas	187,977	3,641,620
Natural Gas	1,733,280	43,219,060
Moss Lake, East		
Crude	18,749	3,774,755
Condensate	49,671	2,523,006
Casinghead Gas	19,140	4,850,982
Natural Gas	1,890,203	70,294,821
Mud Lake		
Crude	——	249,240
Condensate	(77)	124,000
C.T.C.	——	15,816
Casinghead Gas	——	651,588
Natural Gas	——	8,809,738
Mud Lake, East		
Crude	——	80,235
Condensate	26,134	2,972,803
C.T.C.	77,209	1,836,852
Casinghead Gas	——	18,802
Natural Gas	16,731,420	536,024,049
SABINE		
Black Bayou		
Crude	1,367,183	44,593,734
Condensate	——	115,905
Casinghead Gas	584,364	24,222,622
Natural Gas	——	1,786,961
Black Bayou, South		
Crude	462,062	3,682,397
Condensate	70,511	517,835
Casinghead Gas	1,714,818	12,590,562
Natural Gas	704,406	6,144,235
Black Bayou, Southeast		
Condensate	484	484
Natural Gas	15,852	15,852
Blue Buck Point		
Condensate	——	718
Natural Gas	——	61,823

continued

Appendix 6.2(1). Continued

Basin and Field	Intermediate zone	
	1974 Production	Field Cumulative total
Cameron Meadows		
Crude	308,650	15,163,111
Condensate	——	2,317,831
C.T.C.	33,157	2,086,376
Casinghead Gas	175,527	4,529,298
Natural Gas	3,105,341	139,697,893
Cameron Meadows, East		
C.T.C.	——	24,609
Natural Gas	——	652,483
Deep Bayou		
Crude	——	6,070
Condensate	27,246	66,284
C.T.C.	——	319,864
Casinghead Gas	——	6,492
Natural Gas	3,264,493	28,258,378
Gum Cove		
Crude	——	176,662
Condensate	——	494,174
C.T.C.	——	140,975
Casinghead Gas	——	1,708,891
Natural Gas	——	13,412,594
Johnsons Bayou		
Crude	756,543	14,924,288
Condensate	243,540	3,784,050
Casinghead Gas	640,878	11,609,947
Natural Gas	2,868,873	103,656,259
Johnsons Bayou, West		
Condensate	48,357	50,522
Natural Gas	3,447,979	3,572,503
Louisiana Point		
Condensate	——	7,864
Natural Gas	——	1,275,010
Ocean View Beach		
Natural Gas	——	51,231
Phoenix Lake		
Crude	295,138	21,818,254
Condensate	27,456	1,012,105
Casinghead Gas	355,285	26,691,900
Natural Gas	57,142	9,774,012
Sabine Lake, North		
Condensate	28,784	260,780
C.T.C.	——	402,387
Natural Gas	1,063,240	19,505,660
Second Bayou		
Condensate	8,688	361,611
C.T.C.	37,090	1,491,565
Natural Gas	9,880,217	232,197,007
Smith Ridge		
Crude	——	194,931
Casinghead Gas	——	64,127

continued

Appendix 6.2(1). Continued

Offshore zone

Basin and Field	1974 Production	Field Cumulative total
VERMILION		
Lighthouse Point		
Crude	129,053	998,294
Condensate	101,099	1,147,919
Casinghead Gas	1,189,857	4,866,080
Natural Gas	12,084,294	102,918,046
Vermilion Block 14		
Crude	—	77
Condensate	144,267	2,395,449
Natural Gas	30,369,938	299,610,836
Vermilion Block 16		
Crude	—	40,732
Condensate	661,857	11,820,955
Casinghead Gas	—	355,677
Natural Gas	13,286,417	210,152,604
CHENIER BASIN		
Hog Bayou		
Crude	82,147	812,676
Condensate	245,397	3,060,080
Casinghead Gas	38,024	67,820
Natural Gas	16,583,914	179,248,541
East Cameron Block 4		
Condensate	—	1,486,343
Natural Gas	—	72,522,627
East Cameron Block 17		
Crude	2,878	1,938,078
Condensate	—	960,831
Casinghead Gas	3,269	4,885,408
Natural Gas	—	61,850,052
West Cameron Block 33		
Condensate	—	3,113
Natural Gas	—	3,398,693
CALCASIEU		
Creole		
Crude	176,813	6,537,068
Condensate	249	43,146
Casinghead Gas	135,431	6,014,127
Natural Gas	205,528	3,853,125
West Cameron Block 28		
Condensate	2,861	16,605
Natural Gas	911,271	4,724,237

continued

Appendix 6.2(1). Concluded

Basin and Field	Offshore zone	
	1974 Production	Field Cumulative total
SABINE		
West Cameron Block 17		
Condensate	14,639	851,384
Natural Gas	3,452,081	151,908,061
West Cameron Block 19		
Condensate	58,045	568,743
Natural Gas	5,934,259	54,321,123
West Cameron Block 45		
Condensate	15,751	155,371
Natural Gas	247,929	4,264,329

Appendix 6.2(2). Texas oil and gas production from individual oil and gas fields, by basin, in 1974 (Railroad Commission of Texas 1974).

Basin and Field	Intermediate zone	
	1974 Production[1]	Field Cumulative total
SABINE		
Spindletop		
Casinghead	42,987	
Crude	163,908	151,656,650
Willow Slough		
Crude	32,698	2,085,744
Condensate	1,150	
Casinghead	78,466	
Natural Gas	1,773,709	
LaBelle		
Casinghead	189,384	
Crude	391,211	10,499,963
Natural Gas	424,442	
Condensate	1,049	
Rose City		
Casinghead	192,206	
C.O.	283,762	12,423,271
Clam Lake		
Casinghead	112,267	
C.O.	468,093	16,258,506
Big Hill		
Casinghead	718,960	
C.O.	390,895	13,575,051
Natural Gas	2,293,104	
Condensate	32,846	
McFadden Ranch		
Casinghead	190,252	
C.O.	154,413	591,450
EAST BAY		
Oyster Bayou		
Casinghead	4,823,340	
C.O.	5,527,857	95,476,594
Natural Gas	24,005	
Condensate	536	

continued

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[1] Crude oil and condensate in barrels natural gas, condensate and C.T.C. in mcf.

Appendix 6.2(2). Concluded

Field	Production 1974	Cumulative total
High Island		
Casinghead	1,545,669	
C.O.	1,191,447	
Natural Gas	80,588,995	130,157,881
Condensate	237,611	
Mayes		
Casinghead	65,104	
C.O.	20,022	2,576,683
Natural Gas	3,190,204	
Condensate	58,488	
Jackson Pasture		
Casinghead	76,967	
C.O.	77,921	429,381
Natural Gas	84,897	
Condensate	2,220	
Smith Point		
Casinghead	70,969	
C.O.	11,492	97,452
Natural Gas	867,527	
Condensate	24,835	
Point Bolivar		
Casinghead	3,929,382	
C.O.	406,593	14,151,462
Natural Gas	27,367,215	
Condensate	239,432	
Caplan		
Casinghead	619,417	
C.O.	564,921	4,566,718
Natural Gas	92,400	

Appendix 6.2(3). Total Chenier Plain mineral fuel production, by basin, in 1974 (Louisiana Department of Conservation 1977, Railroad Commission of Texas 1974).

Basin	**Crude** (barrels)	**Condensate** and C.T.C. (barrels)	**Casinghead gas** (mcf)	**Natural gas** (mcf)
VERMILION				
Inshore	—	35,454	—	7,592,547
Intermediate	502,721	1,259,479	3,434,103	51,986,767
Offshore	129,053	907,223	1,189,857	55,740,649
TOTAL	631,774	2,202,156	4,623,960	108,319,963
	2,833,930		112,943,923	
MERMENTAU				
Inshore	741,238	2,017,341	886,134	89,997,593
Intermediate	4,767,889	1,016,870	4,390,293	94,666,473
Offshore	—	—	—	—
TOTAL	5,509,118	3,034,211	5,276,427	184,664,066
	8,543,329		189,940,493	
CHENIER				
Inshore	—	—	—	—
Intermediate	170,938	1,983,863	59,418	176,895,009
Offshore	85,025	245,397	41,293	16,483,914
TOTAL	255,963	2,229,270	100,711	193,478,923
	2,485,233		193,579,634	
CALCASIEU				
Inshore	272,833	14,485	257,002	606,836
Intermediate	4,966,074	570,506	4,596,421	36,478,978
Offshore	176,813	3,110	135,431	1,116,799
TOTAL	5,415,720	588,101	4,988,854	38,202,613
	6,003,821		43,191,467	
SABINE (La.)				
Inshore	—	—	—	—
Intermediate	3,189,576	525,314	3,460,872	24,407,513
Offshore	—	117,619	—	11,401,438
TOTAL	3,189,576	643,033	3,460,872	35,808,981
	3,832,609		39,269,853	
SABINE (Tex.) TOTAL	1,864,980	35,045	1,524,522	4,491,255
	1,900,025		6,015,777	
SABINE BASIN TOTAL	5,054,556	678,078	4,985,394	40,300,236
	5,732,634		45,285,630	
EAST BAY, TEX. TOTAL	7,800,253	363,122	11,130,850	112,215,243
	8,163,375		123,346,093	

Appendix 6.2(4). Brine water disposal from individual Louisiana fields, by basin, in 1974 (Louisiana Department of Conservation 1977).

Basin Field	To Disposal Wells	To Pits	To Nonpotable Water Bodies
VERMILION			
Bancker	210.0	--	--
Buck Point	--	--	737.2
Buck Point, East	--	--	72.3
Buck Point, North	--	--	1.1
Esther	27.4	--	--
Esther, Southwest	120.0	--	--
Freshwater Bayou	--	--	457.5
Hill Hole Bayou	--	--	20.5
Live Oak	939.4	--	2,307.3
Redfish Point	--	--	5.9
Theall	351.9	--	--
Total	1,648.7	--	3,601.8
MERMENTAU			
Big Lake	210.9	--	288.1
Chalkley	364.2	21.2	--
Fire Island	222.7	--	--
Florence	42.5	--	--
Florence, South	660.9	--	--
Freshwater Bayou, North	--	--	1,100.8
Grand Cheniere	1,936.2	--	--
Grand Lake	2,136.1	--	--
Gueydan, West	246.4	--	--
Lacassine Refuge	581.2	--	--
Lake Arthur, SW	41.34	10.12	--
Lac Blanc	0.3	--	--
Lake Misere	--	2.8	--
Lakeside	181.3	--	--
Little Pecan Lake	1,399.8	--	--
Mallard Bay	364.0	--	--
Pecan Lake	2,563.3	--	--
Sweet Lake	12,323.8	--	--
White Lake, East	6,281.6	--	--
White Lake, West	2,858.7	--	--
Total	32,415.24	34.12	1,388.9
CHENIER RIDGE			
Cheniere Perdue	981.0	16.1	--
Cheniere Perdue, East	32.1	12.5	--
Deep Lake	1,223.0	--	206.8
Grand Cheniere, South	--	--	179.6
Kings Bayou	421.7	13.5	--
Pecan Island	--	--	3,698.9
Price Lake	--	--	376.4
Total	2,657.8	42.1	4,461.7

continued

Appendix 6.2(4). Concluded

Basin Field	To Disposal Wells	To Pits	To Nonpotable Water Bodies
CALCASIEU			
Bayou Choupique	154.7	—	—
Calcasieu Pass	—	—	176.2
Cameron	3,138.2	—	—
Hackberry, East	—	—	2,286.0
Hackberry, West	—	50.0	1,551.7
High Island	15.7	—	—
Holly Beach, East	—	—	120.7
Mud Lake, East	—	0.006	—
Total	3,308.6	50.006	4,134.6
SABINE			
Black Bayou	—	—	6,438.5
Deep Bayou	—	—	1.3
Johnson's Bayou	12.8	—	—
Johnson's Bayou, West	—	—	6.5
Sabine Lake, North	660.6	—	—
Second Bayou	1.8	10.3	—
Total	675.2	10.3	6,446.3

Appendix 6.2(5). Producing oil and gas wells for 1974 in Chenier Plain basins, and the total number of wells (Louisiana Department of Conservation 1977).

Location of Wells	1974 Producing wells		Total wells to end of 1974	
	Oil	Gas	Oil	Gas
VERMILION				
Bancker	5	0	8	6
Buck Point	0	10	1	16
Buck Point, East	0	2	6	4
Esther	-	2	-	6
Fresh Water Bayou	-	3	-	18
Hill Hole Bayou	1	4	1	2
Intracoastal City	2	0	2	4
Live Oak	0	19	10	13
Buck Point, North	0	2	-	1
Fresh Water Bayou, North	0	17	1	23
Nunez	-	0	-	1
Redfish Point	3	9	2	16
Esther, Southwest	0	2	1	9
Theall	-	4	-	11
MERMENTAU				
Florence, East	0	-	1	-
White Lake, East	15	2	65	7
Fire Island	-	0	-	3
Florence	-	2	1	17
Gueydan	4	1	80	20
Lac Blanc	0	17	4	34
Mulvey	1	0	4	3
White Lake, North	-	0	-	2
Outside Island	0	0	1	3
Riceville	1	5	1	11
Florence, South	2	0	1	2
Lake Arthur, South	-	0	-	1
Gueydan, Southeast	-	8	-	14
Perry, South	-	0	-	1
Riceville, South	0	0	-	1
Gueydan, Southwest	0	2	-	4
Gueydan, West	6	11	37	37
White Lake, West	11	10	27	27
Lake Arthur, East	-	0	-	6
Thornwell, South	0	27	2	51
Lake Arthur, West	2	2	6	5
Chalkley	2	17	38	33
Chalkley, North	0	5	1	8
Big Lake	1	9	50	27
Cheniere Perdue	2	4	1	8
Grand Lake	18	7	65	21
Lacassine Refuge	-	3	-	7
Lake Misere	0	0	1	2

continued

Appendix 6.2(5). Continued

Location of Wells	1974 Producing wells		Total wells to end of 1974	
	Oil	Gas	Oil	Gas
MERMENTAU - Cont'd.				
Lakeside	0	6	1	21
Little Chenier Ridge	0	-	1	1
Mallard Bay	0	6	2	9
Deep Lake, North	0	2	1	7
Sweet Lake, North	0	0	1	1
Pecan Lake	-	13	-	27
Lake Misere, South	0	12	1	17
Pecan Lake, South	1	12	8	44
Thornwell, South	0	27	2	49
Lake Arthur, Southwest	1	10	1	21
Sweet Lake	1	0	86	3
Twin Island	1	7	5	15
Chalkley, West	0	0	1	-
CHENIER BASIN				
Pecan Island, North	-	0	-	1
Pecan Island	-	40	-	44
Big Mouth Bayou	-	1	-	2
Constance Bayou	-	1	-	12
Crab Lake	0	2	2	10
Deep Lake	-	21	-	79
Cheniere Perdue, East	2	0	2	5
Go Around Bayou	-	0	-	4
Grand Cheniere	1	13	3	21
Hog Bayou	3	7	3	15
Kings Bayou	0	10	-	20
Little Cheniere	0	0	1	4
Little Pecan Lake	2	5	8	35
Lower Mud Lake	-	0	-	8
Price Lake	0	3	1	7
Second Lake	-	0	-	2
Creole, South	-	1	-	4
Grand Cheniere, South	-	8	-	20
Cheniere Perdue, West	-	0	-	2
CALCASIEU				
Bayou Choupique	0	0	3	10
Choupique	1	-	5	4
Moss Lake, East	1	4	24	18
Lake Charles	-	1	-	5
Lockport	5	2	165	14

continued

Appendix 6.2(5). Concluded

# Wells	1974 Producing wells		Total wells to end of 1974	
	Oil	Gas	Oil	Gas
CALCASIEU - cont'd.				
Lake Charles, South	4	6	17	18
Calcasieu Lake	0	5	5	2
Calcasieu Pass	0	0	3	13
Cameron	4	22	10	26
Hackberry, East	4	2	397	20
Holly Beach, East	-	3	-	9
Mud Lake, East	0	18	1	26
Grosse Savanne	0	-	1	-
Holly Beach	-	3	-	10
Mud Lake	0	0	1	2
Hackberry, West	23	5	433	19
SABINE				
Phoenix Lake	0	2	52	5
Black Bayou	12	0	168	7
Blue Buck Point	-	0	-	4
Cameron Meadows	9	3	97	9
Deep Bayou	0	2	1	3
East Cameron Meadows	-	0	3	1
Gum Cove	0	0	3	2
Johnson Bayou	23	2	47	24
Louisiana Point	-	0	-	1
Sabine Lake, North	-	1	-	4
Ocean View Beach	-	0	-	1
Second Bayou	-	14	-	27
Smith Ridge	0	0	2	1
Black Bayou, South	9	2	15	1
Johnson's Bayou, West	-	3	-	3

Appendix 6.2(6). Value of agricultural products in Chenier Plain counties/parishes in 1974 (U.S. Department of Agriculture 1975a).

Parish (County)	Area (ha)	Total number of farms	Average number ha/farm	Value			
				All agricultural products	per ha	All crops	Livestock and poultry products
Orange	25,105	190	132.1	2,469	99.1	1,594	511
Galveston	41,917	295	142.1	4,147	98.8	2,926	1,076
Jefferson	130,977	426	307.4	34,788	265.6	30,493	3,599
Chambers	125,108	284	440.3	21,557	172.2	19,930	1,521
Calcasieu	165,151	665	248.4	32,956	199.7	30,204	2,410
Cameron	99,281	329	301.8	22,037	73.1	5,965	1,096
Jefferson Davis	132,826	652	203.7	58,890	443.3	57,353	1,348
Vermilion	151,567	1,475	102.7	56,100	340.2	52,779	2,868

Appendix 6.2(7). Total value of farm products from Chenier Plain counties/parishes in 1974 (U.S. Department of Agriculture 1975a).

Counties/ parishes	Total farm acres	Market values of all agriculture products ($ x 1000)	Value acre ($)	Other farm related income ($ x 1000)	Farm production expenses ($ x 1000)	Net return ($ x 1000)	Net return per acre ($)
Orange	62,035	2,489	40	8	1,973	524	8.45
Galveston	103,576	4,147	40	115	3,388	874	8.43
Jefferson	323,643	34,788	107	563	20,554	14,797	45.72
Chambers	309,141	21,557	70	345	13,477	8,425	27.25
Calcasieu	408,088	32,956	80	168	20,455	12,669	31.04
Cameron	245,323	7,250	30	321	4,589	2,982	12.15
Jefferson Davis	328,212	58,890	180	474	29,947	29,417	89.63
Vermilion	374,523	56,100	150	473	29,632	27,941	74.60

Appendix 6.2(8). Value of crops from Chenier Plain counties/parishes in 1974 (U.S. Department of Agriculture 1975a).

	Total cropland acres	**Harvested cropland acres**	**Value of all crops $ x 1000**	Total crop value per acre of total cropland ($ x 1000)	Total crop value per acre of harvested cropland ($ x 1000)	**Harvested cropland/ total cropland**
Orange	26,101	8,224	1,594	61.0	193.8	.32
Galveston	36,690	15,574	2,926	79.7	187.9	.42
Jefferson	148,664	89,628	30,493	205.1	340.2	.34
Chambers	109,763	59,566	19,930	181.6	334.6	.60
Calcasieu	207,470	126,428	30,204	145.6	238.9	.61
Cameron	65,693	23,217	5,965	90.8	256.9	.35
Jefferson Davis	284,829	215,277	57,353	201.4	266.4	.76
Vermilion	292,633	172,154	52,779	180.4	306.6	.59

Appendix 6.2(9). Method of conversion of county-based agriculture data to Chenier Plain basins.

For each parish within a basin a value per ha was calculated from 1974 data of the U.S. Department of Agriculture (1975). This was multiplied by the ratio of the rural population of the parish in the basin to the total rural population in the parish. This value was summed for all parishes impinging on a basin.

$$\text{Value/ha/basin} = \Sigma \left[\text{Value/ha/parish} \; \frac{\text{Rural population of parish in basin}}{\text{Total rural population of parish}} \right]$$

where n = parishes in a basin

BASIN	Rural Population	PARISH	Factor[1]
Vermilion		Vermilion	1.0 x X_v
Chenier	496		0.40 x $X_{Vermilion}$
	724		0.60 x $X_{Cameron}$
	1,220		
Mermentau	4,452		0.56 x $X_{Vermilion}$
	3,522		0.44 x $X_{Cameron}$
	7,974		
Calcasieu	2,422		0.25 x $X_{Cameron}$
	7,368		0.75 x $X_{Calcasieu}$
	9,790		
Sabine, La.	1,372		0.58 x $X_{Cameron}$
	1,008		0.42 x $X_{Calcasieu}$
	2,480		

continued

Appendix 6.2(9). Concluded

	16,641	0.83 x X_{Orange}
	3,362	0.17 x $X_{\text{Jefferson}}$
Sabine, Tex.	20,003	
		.06 x X_{Cameron}
		.15 x $X_{\text{Calcasieu}}$
		.74 x X_{Orange}
Sabine Total	22,383	.15 x $X_{\text{Jefferson}}$
	2,400	0.50 x X_{Chambers}
	2,424	0.50 x $X_{\text{Galveston}}$
East Bay	4,824	

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[1] Parish factor is the ratio of rural parish population in a basin to total rural population.

Appendix 6.2(10). Agricultural fertilizer use in Chenier Plain counties/parishes in 1974 (U.S. Department of Agriculture 1975a).

County/parish	Total acres	Number of acres fertilized	Percent of total acres fertilized	Tons	Tons/acre
Orange	62,035	7,396	0.12	1,091	0.1475
Galveston	103,576	7,394	0.07	1,427	0.1930
Jefferson	323,643	94,929	0.29	18,545	0.1922
Chambers	309,141	61,291	0.20	12,027	0.1962
Calcasieu	408,088	123,761	0.30	19,907	0.1609
Cameron	245,323	23,797	0.10	3,751	0.1576
Jefferson Davis	328,212	204,498	0.62	34,475	0.1683
Vermilion	374,523	170,214	0.45	28,219	0.1658

Appendix 6.2(11). Estimated Texas (T) and Texas Chenier Plain (C) fur harvest for selected species 1972-1977[1]

Fur	1972-1973		1973-1974		1974-1975		1975-1976		1976-1977	
	T[2]	C[5]	T[2]	C[5]	T[2]	C[5]	T[2,3]	C[5]	T[4]	C[5]
Raccoon	150,362	4,511	304,273	9,128	372,377	11,171	353,444	10,603	430,510	12,915
Nutria	2,240	1,120	41,974	20,987	12,197	6,099	6,715	3,358	45,481	22,741
Muskrat	10,108	8,086	8,646	6,917	16,622	13,299	9,113	7,290	13,157	10,526

[1] Texas Parks and Wildlife Department, unpublished data compiled by Bill Brownlee, 1977.

[2] Estimated Texas harvest based on fur dealer reports.

[3] Number of dealers reporting was too small to accurately estimate for harvest

[4] Estimated Texas harvest based on trapper survey.

[5] Estimate of percent of total for Texas Chenier Plain region of Texas by Bill Brownlee, Texas Parks and Wildlife Department, 1977.

Appendix 6.2(12). Estimated harvest of Chenier Plain muskrats by basin and marsh type.

	Salt marsh		Brackish marsh		Intermediate marsh		Fresh and impounded marsh		Total
	Area	Yield[1]	Area	Yield[2]	Area	Yield[3]	Area	Yield[4]	
Vermilion	1,526	456	13,603	13,204	14,797	5,110	14,067	729	19,499
Chenier	5,836	1,728	14,222	13,794	8,184	2,820	48,834	2,532	20,874
Mermentau	0	0	0	0	5,519	1,904	122,932	6,376	8,280
Calcasieu	2,145	636	26,330	25,545	20,412	7,056	15,667	813	34,050
Sabine	4,610	1,368	38,443	37,335	29,788	10,304	69,752	3,618	52,625
East Bay	3,038	900	8,257	8,017	6,143	2,128	6,869	357	11,402
Total									146,730

[1] At 120 pelts per 1000 ha (Palmisano 1972a).

[2] At 393 pelts per 1000 ha (Palmisano 1972a).

[3] At 140 pelts per 1000 ha (Palmisano 1972a).

[4] At 21 pelts per 1000 ha (Palmisano 1972a).

Appendix 6.2(13). Estimated harvest of Chenier Plain nutria by basin and marsh type.

	Salt marsh		Brackish marsh		Intermediate marsh		Fresh and impounded marsh		Total
	Area	Yield[1]	Area	Yield[2]	Area	Yield[3]	Area	Yield[4]	
Vermilion	1,526	0	13,603	3,024	14,797	10,950	14,067	17,350	31,324
Chenier	5,836	0	14,222	3,159	8,184	6,060	48,834	60,300	69,519
Mermentau	0	0	0	0	5,519	4,080	122,932	151,800	155,880
Calcasieu	2,145	0	26,330	5,850	20,412	15,120	15,667	19,350	40,320
Sabine	4,610	0	38,443	8,550	29,788	22,080	69,752	86,150	116,780
East Bay	3,038	0	8,257	1,836	6,143	4,560	6,869	8,500	14,896
Total									428,719

[1] At 0 pelts per 1000 ha (Palmisano 1972b).

[2] At 90 pelts per 1000 ha (Palmisano 1972b).

[3] At 300 pelts per 1000 ha (Palmisano 1972b).

[4] At 500 pelts per 1000 ha (Palmisano 1972b).

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Appendix 6.2(14). Calculation of commercial fisheries yield per estuarine hectare for East Bay and Sabine basins (U.S. Department of Commerce 1976b).

	Shrimp[1]	Croaker		Blue crabs		Oyster	Sea trout		Red drum	
		Galveston	Sabine	Galveston	Sabine	Galveston	Galveston	Sabine	Galveston	Sabine
	lbs	lbs	lbs	lbs	lbs	lbs meat	lbs	lbs	lbs	lbs
1970	8,652,943	37,000	---	2,622,000	685,000	3,850,200	89,200	---	35,300	---
1971	12,928,943	7,400	---	2,160,800	1,918,000	4,021,700	75,900	---	18,100	---
1972	9,291,636	8,900	---	1,870,100	1,288,700	3,259,700	128,400	---	33,600	---
1973	7,755,219	---	---	2,040,000	1,358,200	1,590,688	232,800	4,000	49,600	700
1974	13,850,693	28,900	---	1,983,000	360,800	1,422,600	272,900	---	34,900	---
1975	9,252,526	23,200	700	1,863,500	620,900	1,236,800	221,000	700	79,500	500
Mean	10,288,664	21,080	t[2]	2,089,900	1,071,933	2,563,615	170,033	t	36,793	t
Size of inland estuary (A)	423,402	353,218	70,070	354,218	70,070	354,218	354,218	70,070	354,218	70,070
Yield per acre per year (lbs/A)	24.3	0.060	t	5.9	15.3	7.24	0.48	t	0.10	t
(Kg per ha)	27.	0.07	t	6.6	17.1	8.1	0.54	t	0.12	t

[1] Grid zone 18 offshore and inland.

[2] t = trace.

Appendix 6.2(15). Western Louisiana commercial fisheries landings, 1970 to 1975 (U.S. Department of Commerce 1976b).

Species	1970		1971		1972		1973		1974		1975	
	Weight Kg x 1000	Value $ x 1000	Weight Kg x 1000	Value $ x 1000	Weight Kg x 1000	Value $ x 1000	Weight Kg x 1000	Value $ x 100	Weight Kg x 1000	Value $ x 1000	Weight Kg x 1000	Value $ x 1000
Menhaden	231,569	10,071	287,523	10,241	230,956	8,376	213,453	19,403	251,717	20,512	233,872	15,423
Shrimp	8,341	8,396	7,391	9,841	9,496	13,558	8,013	14,398	7,097	9,761	7,024	13,777
Blue Crab	1,796	368	334	82	1,940	460	1,888	505.7	1,424	433	2,257	763.3
Flounder	21.4	9.1	13.9	5.6	59.7	30.2	25.6	13.4	18.1	10.3	23.0	18.2
Oyster (meat)	1,754	1,717	--	--	1,494	2,133	984	1,613	379.6	753.2	561.0	957.3
Sea Trout	40.4	19.0	--	--	68.8	38.3	238.5	193.1	173.3	123.9	216.3	183.3
Redfish	6.6	2.3	5.6	2.6	19.8	10.5	28.6	20.6	19.4	12.4	49.3	38.1
Subtotal	243,527.4	20,583.4	295,268	20,173	244,034.3	24,606	224,630.7	36,146.8	260,828.4	31,605.8	244,002.6	31,160.2
Catfish and Bullhead	150	94.9	109	62.0	120.7	69.6	114.1	69.0	114.1	75.4	124.6	93.9
Crawfish	91	59.6	--	--	9.9	7.9	---	---	---	---	---	---
Buffalo	43	12.9	16.8	4.5	---	---	---	---	---	---	---	---
Subtotal	284	167.4	27.7	66.5	130.6	77.5	114.1	69.0	114.1	75.4	124.6	93.9
Miscellaneous other	164.6	29.2	259.2	14.6	192.6		220.7	50.9	144.0	31.0	384.0	65.0
Total	243,977	20,780	295,633	20,255	244,357	16,231	224,965	36,266	261,086.5	31,712.2	244,511.2	31,319.1

Appendix 6.2(16). Texas commercial fisheries landings, 1970 to 1975 (U.S. Department of Commerce 1976b).

	1970				1971			
	Sabine		Galveston		Sabine		Galveston	
	lbs	$	lbs	$	lbs	$	lbs	$
Total finfish	500	100	332,000	4,4019			212,200	33,778
Cobia								
Croaker			37,000	1,882			7,400	520
Drum: Black			39,000	3,779			25,200	2,706
Red			35,300	7,398			18,100	4,322
Flounder	500	100	27,100	5,877			18,500	4,702
Grouper					NO LANDINGS	NO LANDINGS		
King whiting			9,000	523			8,600	608
Sea catfish			13,600	687			4,100	226
Sea trout, spotted			89,200	19,002			75,900	17,760
Sheepshead			23,500	2,087			1,900	207
Red snapper							6,100	577
Other							30,000	1,607
Total shellfish	709,800	73,016	12,101,300	3,919,976	1,960,500	214,817	11,199,300	4,323,192
Crabs, blue	685,000	63,998	2,622,000	244,798	1,918,000	188,008	2,160,800	213,240
Oyster meat	---	---	3,850,200	1,700,547	---	---	4,021,700	2,054,624
Shrimp: Brown and pink	2,900	865	1,356,000	291,480	5,100	569	2,050,100	407,246
(heads on) White	21,990	8,153	4,069,500	1,682,877	37,400	26,240	2,963,800	1,645,695

continued

Appendix 6.2(16). Continued

	1972				1973			
	Sabine		Galveston		Sabine		Galveston	
	lbs	$	lbs	$	lbs	$	lbs	$
Total finfish			493,700	71,524	6,100	2,010	690,400	132,929
Cobia							40,000	3,782
Croaker			8,900	817				
Drum: Black			72,700	7,970	1,400	210	9,300	12,652
Red			33,600	8,433	700	266	49,600	17,529
Flounder			21,100	6,186			9,900	3,733
Grouper (Mullet)							69,100	3,384
King whiting	NO LANDINGS	NO LANDINGS	15,700	1,469			19,200	1,960
Sea catfish			3,200	216			20,500	1,978
Sea trout, spotted			128,400	32,764	4,000	1,534	232,800	75,094
white							5,800	741
Sheepshead			18,700	2,677			52,800	6,434
Red snapper								
Other							97,700	5,642
Total shellfish	1,298,000	132,067	9,487,400	4,869,941	1,358,200	158,433	9,186,200	5,170,005
Crabs, blue	1,288,700	127,369	1,870,100	191,649	1,358,200	158,433	2,040,000	254,376
Oyster meat			3,259,700	2,114,613			2,129,400	1,590,688
Shrimp: Brown and pink			1,398,500	430,982			951,600	428,484
(heads on) White	7,300	4,698	2,956,700	2,132,363			4,063,400	2,896,177
Squid							1,800	280

continued

Appendix 6.2(16). Concluded

	1974				1975			
	Sabine		Galveston		Sabine		Galveston	
	lbs	$	lbs	$	lbs	$	lbs	$
Total finfish			579,900	125,582	4,300	971	613,700	156,968
Cobia								
Croaker			28,900	2,840	700	65	23,200	2,596
Drum: Black			27,600	3,720	600	114	46,400	8,773
Red			34,900	10,792	500	180	79,500	30,070
Flounder			20,100	6,710	500	193	21,200	8,489
Grouper								
King whiting	NO LANDINGS	NO LANDINGS	6,100	566	500	57	18,500	2,680
Sea catfish			33,200	1,828			29,600	2,995
Sea trout, spotted			272,900	87,689	700	243	221,000	85,170
Sheepshead			1,000	146	800	117	32,000	4,694
Red snapper								
Other								
Total shellfish	560,800	77,090	6,638,500	2,838,696	621,300	97,444	7,857,900	4,549,489
Crabs, blue	560,800	77,090	1,983,000	273,301	620,900	96,740	1,863,500	287,019
Oyster meat			836,800	753,292			1,236,800	957,346
Shrimp: Brown and pink			1,422,600	378,773			828,400	344,578
(heads on) White			2,392,400	1,432,538	400	704	3,927,200	2,960,073

Appendix 6.2(17). Total monthly distribution of industrial water use (millions of gallons) in 1967 for southwestern Louisiana (Louisiana Department of Public Works 1970).

Month	Southwestern Louisiana		
	Intake	Consumption	Return flow
January	14,288	1,012	13,276
February	13,410	976	12,434
March	14,820	1,039	13,781
April	15,300	1,051	14,249
May	15,309	1,069	14,240
June	16,324	1,103	15,221
July	16,803	1,130	15,673
August	17,483	1,159	16,324
September	16,924	1,148	15,776
October	16,552	1,142	15,410
November	16,462	1,123	15,339
December	16,819	1,121	15,698
Total	190,494	13,073	177,421

Appendix 6.2(18). Waterborne commerce in Vermilion Basin (Bayou Teche and Vermilion River) (U.S. Army Corps of Engineers 1976).

Total Traffic

Year	Total
1967	1,972,772
1968	1,876,341
1969	1,653,169
1970	1,736,468
1971	1,295,738
1972	1,042,286
1973	785,944
1974	690,733
1975	744,950
1976	998,284

Traffic by Commodity for 1976

Commodity	Imported	Exported	Through	Total
Raw fishery 0911-0913	75,196	--	--	75,916
Crude petroleum 1311	--	230,182	104,872	335,054
Other 'mined' products 0931, 1442-1599	329,694	25,967	--	355,661
Petrochemicals 2810-3313, except 2879	40,456	103,806	--	144,262
Manufactured wood & foods 2011-2711	211	17,641	--	17,852
Other manufactured prod. 3315-3911	27,493	160,210	--	187,703
Misc. (all others)	2,789	105,663	--	108,452

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Appendix 6.2(19). Waterborne commerce in Mermentau Basin (Mermentau River, Bayou Nizpique and Des Cannes) (U.S. Army Corps of Engineers 1976).

Total Traffic

Year	Total
1967	2,954,527
1968	2,501,103
1969	2,286,097
1970	2,580,255
1971	2,325,340
1972	2,361,095
1973	2,293,503
1974	2,082,674
1975	2,081,661
1976	2,086,473

Traffic by Commodity for 1976

Commodity	Imported	Exported	Through	Total
Grains 0103-0111	--	257,379	--	257,379
Raw fishery 0911-0913	722	--	722	1,444
Crude petroleum 1311	80,961	1,404,626	13,925	1,499,512
Other 'mined' products 0931, 1442-1449	137,457	--	--	137,457
Petrochemicals 2810-3313, except 2879	29,005	45,270	478	74,753
Manufactured wood & foods 2011-2711	66	150	--	216
Other manufactured prod. 3315-3911	12,996	20,908	577	34,481
Misc. (all others)	26,567	1,012,212	4,171	1,042,950

Appendix 6.2(20). Waterborne commerce in Calcasieu Basin (Lake Charles Deep Water Channel, Calcasieu River and Pass) (U.S. Army Corps of Engineers 1976).

Total Traffic

Year	Total
1967	49,837,081
1968	52,246,875
1969	55,350,854
1970	55,041,748
1971	60,598,572
1972	56,792,569
1973	51,785,914
1974	51,276,903
1975	49,899,732
1976	55,908,832

Traffic by Commodity for 1976 (short tons)

Commodity	Imported	Exported	Through	Total
Grains 0103-0111	--	671,932	331,149	1,003,081
Raw fishery 0911-0913	167,588	--	--	167,588
Crude petroleum 1311	8,808,496	862,407	7,209,956	16,878,859
Other 'mined' products 0931, 1442-1499	469,584	82,979	2,197,502	2,750,065
Petrochemicals 2810-3313, except 2879	2,405,423	5,482,726	23,272,519	31,160,668
Manufactured wood & foods 2011-2711	1,298	274,751	144,614	420,663
Other manufactured prod. 3315-3911	68,203	254,395	1,031,863	1,354,461
Misc. (all others)	12,634	478,164	8,646,897	9,137,695

Appendix 6.2(21). Waterborne commerce in Sabine Basin (Sabine-Neches Waterway and Sabine Pass Harbor) (U.S. Army Corps of Engineers 1976).

Total Traffic

Year	Total
1967	77,178,385
1968	78,261,206
1969	77,163,412
1970	79,291,102
1971	82,576,969
1972	81,989,291
1973	84,707,017
1974	86,589,660
1975	79,296,056
1976	100,852,284

Traffic by Commodity for 1976

Commodity	Imported	Exported	Through	Total
Grains 0103-0111	31,036	3,304,065	298,940	3,634,041
Crude petroleum 1311	35,350,220	1,397,254	4,825,038	41,572,512
Other 'mined' products 0931, 1442-1499	1,930,155	18,221,139	1,056,507	4,808,801
Petrochemicals 2810-3313, except 2879	3,204,771	27,111,109	15,918,533	46,234,413
Manufactured wood & foods 2011-2711	13,269	238,252	122,790	374,311
Other manufactured prod. 3315-3911	166,030	81,879	956,364	1,204,273
Misc. (all others)	46,528	232,549	1,338,968	1,618,045

Appendix 6.2(22). Waterborne commerce in East Bay Basin (Anahuac Channel, Trinity River Channel to Liberty, Cedar Bayou) (U.S. Army Corps of Engineers 1976).

Total Traffic

Year	Total
1967	721,037
1968	1,016,299
1969	966,207
1970	1,323,384
1971	1,149,165
1972	1,381,268
1973	1,517,352
1974	1,661,778
1975	1,414,332
1976	1,227,893

Traffic by Commodity for 1976

Commodity	Imported	Exported	Through	Total
Raw fishery 0911-0913	5	--	--	5
Other 'mined' products 0931, 1442-1499	280,730	466,779	279,813	1,027,322
Petrochemicals 2810-3313, except 2879	3,148	--	1,709	4,857
Other manufactured products 3315-3911	16,857	73,989	--	90,846
Misc. (all others)	66,077	7,318	31,468	104,863

APPENDIX 6.3 CHENIER PLAIN BIOLOGICAL DATA

Appendix 6.3(1). Waterfowl sampling techniques and procedures.

Permanent north-south aerial transect lines were established at approximately 7-1/2 mile intervals across the Chenier Plain in 1968. A fixed wing aircraft was used to fly these lines and to examine a belt transect 1/8 mile each side of the aircraft. Ducks and coots were recorded by species and by habitat type. An elevation of 100 to 150 feet was maintained while conducting the surveys.

Since the aircraft was not equipped with amphibious landing gear a greater (safer) altitude was maintained over large bodies of water. Within the Chenier Plain, Sabine, Calcasieu, Grand and White Lakes were thus excluded from the survey. While diving ducks, principally lesser scaup, were known to be present on these lakes no effort was made to count them because of the unreliability of counts that were conducted at the higher altitude. Birds were difficult to see under conditions of ideal visibility, and became almost impossible to see when the waters were choppy.

Geese were not recorded during these low level waterfowl inventory flights. The extreme flushing distance of geese made it impossible to determine what portion of the airborne flocks were flushed from the survey strip. Some goose inventory data were available for southwest Louisiana (U.S. Soil Conservation Service 1974).

Birds were recorded by five habitat types: Agriculture, Salt Marsh, Brackish Marsh, Intermediate Marsh and Fresh Marsh. Survey records did not delineate bird distribution by land use categories within the Agriculture Habitat type. Bateman (1977 per comm.) stated that as a general rule about 75% of the ducks and 60% of the geese found in the Agriculture Habitat type were in rice fields.

One additional judgment was necessary to utilize the survey information from the agriculture habitat. Since transects ran from the Gulf to U.S. Highway 90 many of the birds recorded in the Agriculture Habitat were between the northern boundary of the Chenier Plain and U.S. Highway 90. After carefully examining topographic maps, Bateman suggested that 80% of the ducks, 80% of the coots, and 60% of the geese inventoried in the Agriculture Habitat should be assigned to the Chenier Plain.

Since the Inland Open Water Habitat was not specifically inventoried, we were unable to use these aerial surveys to estimate waterfowl use. The greatest acreage in this habitat type is in the four large lakes excluded from the surveys for safety reasons. The ducks using water bodies 10 acres in size but smaller than these lakes were included in the count of the adjacent habitat type.

Appendix 6.3(2). Data acquisition for dominant species of the Chenier Plain.

The first step in gathering data on higher vertebrates in the Chenier Plain was to determine which species are known to occur there. This was accomplished by referring to range maps or species accounts published in the following works: amphibians, Smith (1956), Wright and Wright (1949), Conant (1975); turtles, Carr (1952), Conant (1975); alligator, Conant (1975); lizards, Smith (1946), Conant (1975), Dundee and Rossman (unpublished ms.); birds, Peterson (1963), Robbins et al. (1966); mammals, Hall and Kelson (1959), Lowery (1974b). Range maps and discussions of geographic distribution are often based more or less on inference, and often vary among authors. Exceptions to this are range maps for reptiles given in Rossman and Dundee (unpublished ms.) and for mammals given in Lowery (1974b). Maps in these two publications were compiled from documented occurrences of individuals at specific localities within relatively recent historic times. Another shortcoming of range maps is that they present a static view of dynamic and complex phenomena. Distributions of species are almost constantly changing, either expanding (e.g. cattle egret) or contracting (e.g. whooping crane), so these lists must be viewed as only preliminary.

In an effort to determine representative species, those species whose ranges were mostly outside the Chenier Plain and for which there were only occasional records of occurrence in the area were omitted from the list. Exceptions to this were species that are on the U.S. Department of the Interior's Endangered or Threatened list, or those whose populations are known to be declining. Each year the National Audubon Society publishes a "Blue-list" of bird species whose populations are declining in some part of their geographic range. Though this may not apply to breeding populations in Louisiana, most of these species occur in the Chenier Plain during spring and fall migration and thus merit attention. For most of the remaining species, there is virtually nothing known about population status in Louisiana. It is likely that some of these would have endangered status if they were better known.

Basin Level - Occurrence of Species in the 14 Habitats

These determinations were based on information gleaned from the above publications and also from Lowery (1974a). In the absence of systematic faunal surveys, habitats listed by the above authors for each species were relied on. This often required some interpretation, and the assignment of a species to a particular habitat was in no way rigorous. For example, Peterson (1963) lists the following habitats for the least sandpiper: "mudflats, grassy marshes, prairie pools, shores". Lowery (1974a) lists "beaches, mudflats, grassy meadows, muddy lakeshores" for this species. The least sandpiper was then assigned to the following habitats as defined in the Chenier Plain project: Inland Open Water, Beach, Salt Marsh, Brackish Marsh, Intermediate Marsh, Fresh Marsh, and Pasture. A similar procedure was followed for each species.

continued

Appendix 6.3(2) Concluded.

Habitat Level

Sources of information at the habitat level were cited in the tables. Trophic relationships, except where noted, were not specific to Chenier Plain. These relationships vary somewhat both geographically and with time; thus the static view presented in the tables may be somewhat misleading. The information may be used without much error, however, as generally indicative of the kinds of foods a particular species consumes. Constraints of anatomy, physiology and behavior of a species usually limit the kinds of food it can consume to a relatively narrow range.

Seasonal peaks of abundance given for birds refer to the state as a whole, and not to specific habitats. Species whose peaks occur in spring and summer are generally those that spend the winter months in Mexico, Central America, and South America, returning in the spring to nest in the coastal zone. Those that peak in fall and winter usually nest to the north of the coastal zone. A third category of birds, the transients, breed for the most part to the north of the coastal zone and winter to the south. Year-round residents utilize coastal habitats both as wintering and as nesting grounds.

Appendix 6.3(3). Data acquisition for fish species of the Chenier Plain.

Notes on the trophic relations, local distributions, relative abundance and economic importance of most fish species known to occur in the Chenier Plain are present in the tabular format for the Nearshore Gulf and Inland Open Water habitats.

In contrast to certain other groups of organisms, fishes of the Chenier Plain have received little study. Consequently the information presented here is derived in large part from the literature, with emphasis on that pertaining to fairly well-studied (and ecologically similar) adjacent areas -- namely, the Galveston Bay System to the west and the Vermilion-Atchafalaya Bay complex to the east. For many species, information derived from informal unpublished observations were included.

Information on trophic relations is available for most of the species, either from regional food habit analyses or by inference from observations on the species or close relatives in other areas. Within a given feeding type (e.g. predator, strainer, grazer, etc.), fishes tend to be highly opportunistic and consume virtually any ingestible materials that are available. Among estuarine species there tends to be considerable overlapping of feeding types, especially when various life-history stages are considered (Darnell, R. M. 1958).

Habitat relations are summarized under the heading Local Distribution. The position normally occupied by the species in the water column (e.g. demersal, pelagic) was noted. In this context the term "pelagic" was used in reference to fishes typically not associated with the bottom, as opposed to the biogeographic connotation of the word (i.e., open ocean dwelling) which has no relevance here. Horizontal patterns of distribution were also noted, since many species tend to occupy mainly the narrow zone along the beach, deeper areas farther offshore, or places where special substrate conditions obtain (e.g., reefs, wrecks, oil platforms, etc.). Inland Open Water Habitat entries for this category emphasize salinity zones and major types of water bodies such as river channels, marsh bayous and lakes, swamps, and so forth. Criteria for salinity zones followed Parker (1965): fresh to brackish (0 to 5 o/oo); low (5 to 10 o/oo); moderate (10 to 20 o/oo); and high (greater than 20 o/oo).

Relative and seasonal abundance entries are intended to give a broad idea of temporal and spatial patterns. In many instances they refer back to habitat information (e.g., locally abundant). Virtually no reliable data pertaining to the Chenier Plain habitats are available on relative abundance, let alone estimates of standing stocks. Even if studies could be conducted, it is unlikely that reliable estimates of absolute densities would be produced, considering the state of the art (McHugh 1967). A descriptive characterization of the fishes in this basin would require a long-term (minimum 3 years) monthly sampling program employing several gears in representative habitats.

Economic importance entries are intended to give the reader a general impression of the relative significance of the species, with a view toward the possible desire to establish priorities in planning.

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Appendix 6.3(4). Calculated net primary production in Vermilion Basin.

	A	B	C	D	AxD
Habitat	Area (km^2)	% Area[1]	% Area[2]	Production Rate ($mt/km^2/yr$)	Estimated Primary Production (mt/yr)
Nearshore Gulf	1,155.99	60.6	--	500[5]	577,995.0
Inland Open Water	189.77	9.9	25.2	900[6]	170,793.0
Salt Marsh	15.26	0.8	2.0	2270[7]	34,640.2
Brackish Marsh	136.03	7.1	18.1	2760[7]	375,442.8
Intermediate Marsh	147.97	7.8	19.7	2830[7]	418,755.1
Fresh Marsh	61.05	3.2	8.1	2230[7]	136,141.5
Impounded Marsh	79.62	4.2	10.6	2000[3]	159,240.0
Swamp Forest	4.64	0.2	0.6	1360[4]	6,310.4
Upland Forest	32.53	1.7	4.3	1000[3]	32,530.0
Beach	3.96	0.2	0.5	0	0
Ridge	26.55	1.4	3.5	1000[3]	26,550.0
Rice Field Agriculture (other than rice)	20.56	1.1	2.7	1500[8]	30,840.0
Pasture	33.18	1.7	4.4	900[8]	29,862.0
Urban	1.99	0.1	0.3	0	0
TOTAL	1,909.10			1047	1,999,100.0
Less Nearshore Gulf	753.11			1887	1,421,105.0

[1] including Nearshore

[2] excluding Nearshore

[3] estimated

[4] Conner and Day 1976

[5] Sklar 1976 (See Part III)

[6] Day et al. 1973

[7] See Part 4.2.

[8] See Part 4.6.

Appendix 6.3(5). Calculated net primary production in Mermentau Basin.

	A	B	C	D	AxD
Habitat	Area (km^2)	% Area[1]	% Area[2]	Production rate (mt/km^2/yr)	Estimated primary production (mt/yr)
Nearshore Gulf	0	--	--	500[5]	0
Inland Open Water	614.97	29.8	29.8	900[6]	553,473.0
Salt Marsh	0	0	0	2270[7]	0
Brackish Marsh	0	0	0	2760[7]	0
Intermediate Marsh	55.19	2.7	2.7	2830[7]	156,187.7
Fresh Marsh	735.33	35.6	35.6	2230[7]	1,639,785.9
Impounded Marsh	493.99	23.9	23.9	2000[3]	987,980.0
Swamp Forest	16.60	0.8	0.8	1360[4]	22,576.0
Upland Forest	27.92	1.4	1.4	1000[3]	27,920.0
Beach	0	0	0	0	0
Ridge	126.34	6.2	6.2	1000[3]	126,340.0
Rice Field Agriculture (other than rice)	363.66	17.6	17.6	1500[8]	545,490.0
Pasture	230.69	11.2	11.2	900[8]	207,621.0
Urban	15.95	0.8	0.8	0	0
TOTAL	2,680.64			1592	4,267,373.6
Less Nearshore Gulf	2,680.64			1592	4,267,373.6

[1] including Nearshore

[2] excluding Nearshore

[3] estimated

[4] Conner and Day 1976

[5] Sklar 1976 (See Part III)

[6] Day et al. 1973

[7] See Part 4.2.

[8] See Part 4.6.

Appendix 6.3(6). Calculated net primary production in Chenier Basin.

	A	B	C	D	AxD
Habitat	Area (km^2)	% Area[1]	% Area[2]	Production rate ($mt/km^2/yr$)	Estimated primary production (mt/yr)
Nearshore Gulf	1,006.58	51.5	--	500[5]	503,290.0
Inland Open Water	56.38	2.9	6.0	900[6]	50,742.0
Salt Marsh	58.36	3.0	6.2	2270[7]	132,477.2
Brackish Marsh	142.22	7.3	15.0	2760[7]	392,527.2
Intermediate Marsh	81.84	4.2	8.6	2830[7]	231,607.2
Fresh Marsh	0	0	0	2230[7]	0
Impounded Marsh	488.34	25.0	51.5	2000[3]	976,680.0
Swamp Forest	0	0	0	1360[4]	0
Upland Forest	0	0	0	1000[3]	0
Beach	15.44	0.8	1.6	0	0
Ridge	67.08	3.4	7.1	1000[3]	67,080.0
Rice Field Agriculture (other than rice)	6.71	0.3	0.7	1500[8]	10,065.0
Pasture	27.51	1.4	2.9	900[8]	24,759.0
Urban	4.01	0.2	0.4	0	0
TOTAL	1,954.47			1222	2,389,227.6
Less Nearshore Gulf	947.89			1990	1,885,937.6

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[1] including Nearshore

[2] excluding Nearshore

[3] estimated

[4] Conner and Day 1976

[5] Sklar 1976 (See Part III)

[6] Day et al. 1973

[7] See Part 4.2.

[8] See Part 4.6.

Appendix 6.3(7). Calculated net primary production in Calcasieu Basin.

Habitat	A Area (km^2)	B % Area[1]	C % Area[2]	D Production rate (mt/km^2/yr)	AxD Estimated primary production (mt/yr)
Nearshore Gulf	402.43	22.9	--	500[5]	201,215.0
Inland Open Water	409.56	23.3	30.3	900[6]	368,604.0
Salt Marsh	21.45	1.2	1.6	2270[7]	48,691.5
Brackish Marsh	263.30	15.0	19.4	2760[7]	726,708.0
Intermediate Marsh	204.12	11.6	15.1	2830[7]	577,659.6
Fresh Marsh	59.16	3.4	4.4	2230[7]	131,926.8
Impounded Marsh	97.51	5.6	7.2	2000[3]	195,020.0
Swamp Forest	7.15	0.4	0.5	1360[4]	9,724.0
Upland Forest	14.30	0.8	1.1	1000[3]	14,300.0
Beach	8.44	0.5	0.6	0	0
Ridge	113.70	6.5	8.4	1000[3]	113,700.0
Rice Field Agriculture (other than rice)	72.68	4.1	5.4	1500[8]	109,020.0
Pasture	59.70	3.4	4.4	(unimp. 250) imp. 900[8]	53,730.0
Urban	22.77	1.3	1.7	0	0
TOTAL	1,756.27			1452	2,550,298.9
Less Nearshore Gulf	1,353.84			1735	2,349,083.9

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[1] including Nearshore

[2] excluding Nearshore

[3] estimated

[4] Conner and Day 1976

[5] Sklar 1976 (See Part III)

[6] Day et al. 1973

[7] See Part 4.2.

[8] See Part 4.6.

Appendix 6.3(8). Calculated net primary production in Sabine Basin.

	A	B	C	D	AxD
Habitat	Area (km^2)	% Area[1]	% Area[2]	Production rate ($mt/km^2/yr$)	Estimated primary production (mt/yr)
Nearshore Gulf	842.11	22.4	--	500[5]	421,055.0
Inland Open Water	472.23	12.6	16.2	900[6]	425,007.0
Salt Marsh	46.10	1.2	1.6	2270[7]	104,647.0
Brackish Marsh	384.43	10.2	13.2	2760[7]	1,061,026.8
Intermediate Marsh	297.88	7.9	10.2	2830[7]	843,000.4
Fresh Marsh	285.31	7.6	9.8	2230[7]	636,241.3
Impounded Marsh	412.12	11.0	14.1	2000[3]	824,240.0
Swamp Forest	36.99	1.0	1.3	1360[4]	50,306.4
Upland Forest	81.25	2.2	2.8	1000[3]	81,250.0
Beach	21.24	0.6	0.7	0	0
Ridge	193.91	5.1	6.6	1000[3]	193,910.0
Rice Field Agriculture (other than rice)	101.71	2.7	3.5	1500[8]	152,565.0
Pasture	393.63	10.5	13.5	(unimp. 250) imp. 900[8]	354,267.0
Urban	190.88	5.1	6.5	0	0
TOTAL	3,759.79			1369	5,147,515.9
Less Nearshore Gulf	2,917.77			1620	4,726,460.9

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[1] including Nearshore

[2] excluding Nearshore

[3] estimated

[4] Conner and Day 1976

[5] Sklar 1976 (See Part III)

[6] Day et al. 1973

[7] See Part 4.2.

[8] See Part 4.6.

Appendix 6.3(9). Calculated net primary production in East Bay Basin.

	A	B	C	D	AxD
Habitat	Area (km^2)	% Total Area[1]	% Total Area[2]	Production rate (mt/km^2/yr)	Estimated primary production (mt/yr)
Nearshore Gulf	305.46	27.3	--	500[5]	152,730.0
Inland Open Water	265.53	23.7	32.6	900[6]	238,977.0
Salt Marsh	30.38	2.7	3.7	2270[7]	68,962.6
Brackish Marsh	82.57	7.4	10.2	2760[7]	227,893.2
Intermediate Marsh	61.43	5.5	7.6	2830[7]	173,846.9
Fresh Marsh	22.46	2.0	2.8	2230[7]	50,085.8
Impounded Marsh	46.23	4.1	5.7	2000[3]	92,460.0
Swamp Forest	--	0	0	1360[4]	0
Upland Forest	2.64	0.2	0.3	1000[3]	2,640.0
Beach	12.56	1.1	1.5	0	0
Ridge	70.03	6.3	8.6	1000[3]	70,030.0
Rice Field Agriculture (other than rice)	37.66	3.4	4.6	1500[8]	56,490.0
Pasture	156.54	14.0	19.2	(unimp. 250) imp. 900[8]	140,886.0
Urban	25.77	2.3	3.2	0	0
TOTAL	1,119.26			1139	1,275,001.5
Less Nearshore Gulf	813.80			1379	1,122,271.5

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[1] including Nearshore

[2] excluding Nearshore

[3] estimated

[4] Conner and Day 1976

[5] Sklar 1976 (See Part III)

[6] Day et al. 1973

[7] See Part 4.2.

[8] See Part 4.6.

Appendix 6.3(10). Potential hunting use (man days/yr) by habitat for each Chenier Plain basin[1].

Habitat Type	Hectares	Deer	Turkey	Dove & Quail	Rabbit	Squirrel	Duck	Geese	Other Marsh Birds	TOTAL
VERMILION										
Salt Marsh	1,526.10	94.0	--	45.3	113.2	--	11.33	56.6	942.8	1,263.2
Brackish Marsh	13,602.99	1,701.1	--	407.4	4,079.2	--	5,092.9	8,509.6	9,259.8	29,050.0
Intermediate Marsh	14,796.84	2,810.4	--	448.1	5,057.1	--	14,062.7	1,875.0	6,898.7	31,152.0
Fresh & Imp. Marsh	13,067.18	5,694.7	--	847.5	4,892.3	--	2,935.4	1,630.8	10,552.0	26,552.5
Pasture	3,318.09	--	--	911.0	738.0	--	--	--	122.7	1,771.7
Rice (all crops)	2,055.85	--	--	530.8	305.5	--	76.4	508.0	91.4	1,512.1
Forest	3,717.12	3,908.5	1,102.6	110.1	1,377.1	2,758.3	413.0	--	--	9,669.5
TOTAL		14,208.7	1,102.6	3,300.2	16,562.4	2,758.3	22,591.7	12,580.0	27,867.4	100,971.3
CHENIER										
Salt Marsh	5,836.10	359.4	--	173.3	433.1	--	43.3	216.5	3,605.3	4,830.9
Brackish Marsh	14,222.18	1,778.5	--	426.0	4,264.9	--	5,324.7	8,897.0	9,681.3	30,372.3
Intermediate Marsh	8,184.14	1,554.4	--	247.8	2,797.1	--	7,778.1	1,037.1	3,815.7	17,230.2
Fresh & Imp. Marsh	48,834.08	21,282.0	--	3,167.2	18,283.2	--	10,969.9	6,094.4	39,434.3	99,231.0
Pasture	2,751.11	--	--	755.3	611.9	--	--	--	101.8	1,469.0
Rice (all crops)	641.05	--	--	165.5	95.2	--	23.8	158.4	28.5	471.4
Forest	0.0	--	--	--	--	--	--	--	--	--
TOTAL		24.974.3	--	4.935.1	26.485.4	--	24.139.8	16.403.4	56,666.9	153,604.9

continued

Appendix 6.3(10). Continued

Habitat Type	Hectares	Deer	Turkey	Dove & Quail	Rabbit	Squirrel	Duck	Geese	Other Marsh Birds	TOTAL
SABINE										
Salt Marsh	4,609.87	283.9	—	136.9	342.1	—	34.2	171.0	2,847.8	3,815.8
Brackish Marsh	38,443.14	4,807.3	—	1,151.4	11,528.3	—	14,392.9	24,048.9	26,168.9	82,097.7
Intermediate Marsh	29,779.85	5,656.1	—	901.8	10,177.9	—	28,302.3	3,773.6	13,884.2	62,696.9
Fresh & Imp. Marsh	69,751.92	30,398.1	—	4,523.8	26,114.7	—	15,668.8	8,704.9	56,325.8	141,736.1
Pasture	39,363.01	—	—	10,807.3	8,754.8	—	--	--	1,456.1	21,018.2
Rice (all crops)	10,171.19	--	—	2,626.2	1,511.3	—	377.9	2,513.3	452.0	7,480.8
Forest	11,823.96	12,432.8	3,507.4	350.1	4,380.4	8,773.9	1,313.7	--	--	30,758.3
TOTAL		53,578.2	3,507.4	20,497.5	62,809.5	8,773.9	60,089.8	99,211.7	101,134.8	349,602.8
EAST BAY										
Saline Marsh	3,038.04	187.1	—	90.2	225.4	—	22.6	112.7	1,876.8	2,514.8
Brackish Marsh	8,256.98	1,032.5	--	247.3	2,476.1	—	3,091.4	5,165.3	5,620.7	17,633.3
Intermediate Marsh	6,142.86	1,166.7	--	186.0	2,099.4	—	5,838.1	778.4	2,864.0	12,932.6
Fresh & Imp. Marsh	6,868.88	2,993.5	--	445.5	2,571.7	—	1,543.0	857.2	5,546.7	13,957.6
Pasture	15,653.99	--	—	4,297.9	3,481.6	--	--	--	579.1	8,358.6
Rice (all crops)	3,766.09	—	—	972.4	559.6	—	139.9	930.6	167.4	2,769.9
Forest	263.86	277.4	78.3	7.81	97.8	195.8	29.3	—	—	686.4
TOTAL		5,657.2	78.3	6,247.1	11,511.6	195.8	10,664.3	7,844.2	16,654.7	58,853.2

continued

Appendix 6.3(10). Concluded

Habitat Type	Hectares	Deer	Turkey	Dove & Quail	Rabbit	Squirrel	Duck	Geese	Other Marsh Birds	TOTAL
MERMENTAU										
Salt Marsh	0.0	--	--	--	--	--	--	--	--	0
Brackish Marsh	0.0	--	--	--	--	--	--	--	--	0
Intermediate Marsh	5,518.82	1,048.2	--	167.1	1,886.2	--	5,245	699.3	2,573.0	11,618.8
Fresh & Imp. Marsh	122,932.01	53,574.1	--	7,972.8	46,025.0	--	27,615.0	15,311 7	99,269.6	249,798.2
Pasture	23,068.80	--	--	6,333.7	5,130.8	--	--	--	853.3	12,317.8
Rice (all crops)	36,365.84	--	--	9,389.8	5,403.5	--	1,351.3	8,986.0	1,616.2	26,746.7
Forest	4,431.81	4,660	1,314.6	131.2	1,641.8	3,288.6	492.4	--	--	11,528.7
TOTAL		59,282.3	1,314.6	23,994.6	60,087.3	3,288.6	34,703.7	2,502.7	104,312.1	312,010.2
CALCASIEU										
Salt Marsh	2,144.88	132.1	--	63.7	159.2	--	15.9	79.6	1,325	1,775.4
Brackish Marsh	26,329.83	3,292.6	--	788.6	7,895.8	--	9,857.7	16,471.1	17,923.1	56,229.0
Intermediate Marsh	20,411.98	3,876.9	--	618.1	6,976.2	--	19,399.2	2,586.6	9,516.6	42,973.6
Fresh & Imp. Marsh	15,666.94	6,827.7	--	1,016.1	5,865.6	--	3,519.4	1,955.2	12,651.3	31,835.3
Pasture	5,970.05	--	--	1,639.1	1,327.8	--	--	--	220.8	3,187.8
Rice (all crops)	7,267.91	--	--	1,876.6	1,079.9	--	270.1	1,795.9	323.0	5,345.5
Forest	2,144.88	2,255.3	636.3	63.5	794.6	1,591.6	238.3	--	--	5,579.6
TOTAL		16,384.6	636.3	6,065.7	24,099.1	1.591.6	33,300.6	22,888.4	41,959.8	146,926.2

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[1] Calculated from man days per ha hunting potential (Table 3.61).

Appendix 6.3(11). Ecological characteristics of important waterfowl species in the Chenier Plain.

Additional life history morphological aspects of selected species of waterfowl are presented here.

Size: Canada geese may weigh as much as 18 pounds, whereas green-wing teal rarely exceed 1 pound.

Clutch size: The number of eggs in a brood may vary from 3 to 4 for most geese, to 20 for some duck species. One or two broods may be hatched annually, depending upon length of breeding season.

Sexual Maturity: Geese and some ducks are not sexually mature until two or three years of age, whereas some duck species mature in less than a year.

Incubation period and mortality of young: Incubation usually requires from 3 to 5 weeks; mortality of young birds ranges from 40% in some ducks down to about 10% for geese.

Nesting: Materials used in the construction of nests, location of nests, and the amount of territory required to defend nests vary greatly.

Pair bond formation: Strongest in geese, which may mate for life. The male takes a part in defending the nest. Pair bond formation is weak in the redhead duck. Some ducks allow other species to raise their offspring.

Family bonds: Geese have strong family bonds and juvenile geese will remain with their parents until they reach breeding age. In many duck species, family bonds end after the young reach their fledgling stage, about 40 to 50 days.

Molt: Geese lack a prenuptial fall molt, whereas male ducks have a fall molt. Postnuptial molt, at the time of fledging among the young, is common to all species and sexes of waterfowl, and is a major reason for the lack of post-fledgling parental bonds in ducks; parents simply cannot defend themselves and their offspring.

Morphology: Waterfowl exhibit greater variation in such measures as bill shape, leg placement and wing size than other closely related groups of birds. This variation influences the high degree of habitat exploitation and the low interspecies competition for the same foods. Some differences were mentioned in preceeding sections. One important area of morphology is related to flying ability. In general, diving ducks have less bulky wings than dabbling ducks; diving ducks can move more easily under water, but they require longer distances for take off.

Although waterfowl are closely related taxonomically, they show great interspecific diversity. Each difference between species is indicative of an evolutionary attempt to guarantee resource availability. It is clear that some species have been more successful than others in exploiting their environment. It would be valuable to compare the components of behavior and morphology in greater detail with population dynamics, to increase our ability to project trends in their population numbers.

Lesser snow goose (*Chen caerulescens*)

The lesser snow goose is the most abundant goose in the Chenier Plain and has its wintering grounds heavily concentrated on the western Gulf coast from the Mississippi River Delta to northern Mexico, although the primary range extends only to Corpus Christi, Texas. It occurs in blue and white color phases that reflect breeding populations in northern Canada; the color phases were thought to be separate species prior to studies by Cooch (1961). The blue phase is dominant in the eastern portion of the species range, and the white phase is dominant in the western portions of both breeding and wintering grounds. A color phase gradient extends across the Chenier Plain, where the percentage of blues diminishes from 80% at Gueydan, 65% at Sabine National Wildlife Refuge, 50% at the Louisiana-Texas border, to 20% at Anahuac National Wildlife Refuge (Schroer and Chabreck 1974). These geese arrive in the Chenier Plain with regularity during mid-October, and remain until March or April (Louisiana Wildlife and Fisheries Commission 1962). Peak numbers in the Chenier Plain, as surveyed by the state wildlife agencies, have varied from 300,000 to 600,000 with the greatest variation occurring in Texas. Many geese that formerly used coastal marshes between Galveston Bay and the Sabine River have migrated to the rice prairie region southwest of Houston (Texas Parks and Wildlife Department 1975). Similar changes have been noted in Louisiana, where geese are utilizing the rice fields of southwestern Louisiana to a greater extent than they had previously (Louisiana Wildlife and Fisheries Commission 1961). Louisiana geese, however, are generally counted in rice fields within or proximal to Louisianan Chenier Plain boundaries, such that population fluctuation has not been observed.

Geese are more social than other waterfowl. They tend to have stronger family bonds, with pair bonds lasting years in some cases, and offspring remaining with parents until they become sexually mature (Smithey et al. 1973).

All Chenier Plain geese exhibit similar food habits, so the following discussion is intended to be relevant to other goose species. A number of surveys have noted a preference for roots and tubers of marsh plants, a predilection that causes large areas to be "eaten out" by flocks. As mentioned above, rice fields have become favored feeding grounds during the past 20 to 30 years, especially in late winter after the close of hunting. Rice stubble and unharvested or spilled grain (which accounts for 10% of total planted grain) provides a supplementary food source. As browsers, geese do not dabble for food to the degree that ducks do, and do not show a great preference for flooded fields.

White-fronted goose (*Anser albifrons*)

The white-fronted goose or speckle belly is a relatively common winter resident, although average peak numbers are only about 10% of those for the lesser snow goose. They are primarily a bird of the western flyways, a reflection of the westerly location of their breeding grounds in northwestern Canada and Alaska. These birds migrate to Louisiana and Texas by way of the Mississippi and Central Flyways. The Louisiana Chenier Plain represents the easternmost part of the winter range, and the population is concentrated in the region of Lacassine National Wildlife Refuge, where they take advantage of enhanced fresh marsh conditions as well as protection from hunters. However, white-fronted geese are prized by hunters, and large numbers are taken each year (U.S. Fish and Wildlife Service 1975).

Canada goose (*Branta canadiensis*)

The largest of North American geese, the Canada goose is not represented in large numbers in the Chenier Plain, but winters farther to the north, east and west. Historically Canada geese were more numerous than at present in Louisiana, with populations of 30,000 to 50,000 individuals in the 1930's and 1,000 to 5,000 birds within the last decade (Yancey 1960). The primary cause for this decline is the management practices in the northern Mississippi River Valley, where birds "short stop" to take advantage of habitat provided by State and Federal wildlife refuges (Hawkins 1964). The most extreme example of shortstopping occurs at Horicon National Wildlife Refuge, Wisconsin where in 30 years the wintering population has grown from a negligible number to around 200,000.

Canada geese wintering in the Chenier Plain are members of a population which breed in the eastern prairie section of Canada, which includes Ontario and Manitoba (Chabreck et al. 1974). They migrate through the Dakotas, Iowa and thence down the Mississippi Valley. Many geese which formerly made the trip to the Chenier Plain now stop in Missouri. In an effort to reverse this trend, wildlife biologists at Rockefeller Wildlife Refuge have successfully induced Canada geese to breed locally. From the initiation of the project in 1960, the flock had grown to over 1,000 in 1969 (Chabreck 1970).

In regions of Texas outside the Chenier Plain, most notably the rice prairies of central coastal Texas, the Canada geese are numerous, second only to the lesser snow geese (Texas Parks and Wildlife Department 1976).

Mallard (*Anas platyrhynchos*)

The mallard is and has been the most important game bird among all Louisiana waterfowl. Although other species have been present in greater numbers in recent years, mallards are still the largest contributor to the total waterfowl harvest. Reasons for the mallard's popularity among hunters are its large size, its plant diet, and its unequaled adaptability to a variety of habitats which makes it highly accessible to hunters.

Mallards breed in the northern Great Plains of Manitoba, Saskatchewan and the Dakotas, a region without parallel in magnitude of waterfowl production; this region is commonly referred to as the "pothole country". This region contains glacially-derived potholes, ponds and marsh regions with abundant food supplies and protected habitat. Mallards outnumber other species indigenous to the region (Hawkins 1964). The Lower Mississippi River Valley and the coastal marshes and prairies of Louisiana constitute primary wintering grounds (Hawkins 1964). Mallards are present in large numbers in the Chenier Plain from late September until March.

The mallard is a dabbler, whose diet consists almost exclusively of plant materials. Glasgow and Junca (1962) found 98% plant material in 226 mallard crops. However, the diversity of types and parts of plants utilized shows great adaptability by the species to prevailing food supplies. Mallards were among the first ducks to make use of domestic rice as a diet staple. Like geese, they browse roots of marsh plants, and are well suited to dabble for aquatic species, such as widgeongrass. Mallards appear to prefer freshwater marsh vegetation and spend most of the winter in fresh marshes adjacent to rice fields (Louisiana Wildlife and Fisheries Commission 1961).

Mallards generally constitute around 20% of the total duck harvest in Louisiana. For the parishes and counties of Calcasieu, Cameron, Vermilion, Chambers, Jefferson and Orange, the figure is slightly lower (14.8%) because of the great diversity of duck species available to hunters in the Chenier Plain. The point system has also reduced the harvest of mallards. A high point value has been placed on mallards, because of a decline in overwintering numbers related to adverse conditions in their breeding grounds (Louisiana Wildlife and Fisheries Commission 1961).

Mottled duck (*Anas fulvigula*)

This mallard-like duck is the only year-long resident dabbler on the western Gulf coast and the only abundant breeder in the Chenier Plain marshes. Like the mallard, it is a favored game bird, although its contribution to the harvest numbers is proportionately less.

Mottled ducks are generally nonmigratory, and numbers remain constant throughout the year, with the exception of a small percentage that irregularly migrates to Texas and Mexico (Lowery 1974a). This movement occurs in response to periodic adverse climatic conditions. The northern limit of the mottled duck's range is normally no farther than the coastal rice prairies of the Chenier Plain (Lowery 1974a). Average peak population in the Chenier Plain in spring and summer months numbers about 50,000 birds.

Food habit studies have produced varying estimates of the relative amounts of plant and animal materials eaten by mottled ducks. In an early study, Bent (1923) found that mollusks, crustaceans and insects accounted for 40% of the diet, while Smith (1973) found only 7.0% of their gizzard contents to be of animal origin. Some of this difference may be explained by the consumption of domestic rice by mottled ducks during the past 50 years.

Nesting takes place in intermediate and brackish marshes, near open water bodies, and in grass stands, where the nest is hidden from view of predators (Bent 1923). Mottled ducks in general appear to be more tolerant of salinity than mallards and are therefore, able to utilize a wide range of marsh resources.

Gadwall (*Anas strepera*)

According to Bateman's aerial waterfowl surveys, the gadwall is the most populous duck species in the Chenier Plain, represented by an average of over 600,000 birds at peak times.

Gadwall breeding grounds are further west than those of the mallard, in the western Great Plains and the lakes of the western mountains (Johnsgard 1975). They are not exclusively birds of the Mississippi Flyway, and may travel by way of the West Coast to Mexico, or down the Central Flyway to Texas and Mexico. Those traveling down the Mississippi Flyway winter in Louisiana (Hawkins 1964). Gadwalls arrive in the Chenier Plain around mid-October, reach peak numbers within one month and remain relatively late, into April and May (Lowery 1974a).

Gadwalls do not usually eat rice tailings. Instead they remain in fresh marshes and feed upon submerged aquatic plants such as widgeongrass and pond weed. They also eat seeds of marsh grasses. Smith (1973) found their diet to consist of 35% *Elodea densa*, 33% spikerush, 22% algae and 10% assorted aquatics.

Gadwalls comprise about 9% of the average annual harvest in the six county/parish area of Calcasieu, Cameron, Vermilion, Chambers, Jefferson and Orange, while accounting for almost 16% of the Chenier Plain wintering duck population. Reasons for underhunting appear to be twofold. The gadwall is not considered a table bird of the same caliber as the mallard by many hunters, and its range on its wintering grounds is not as wide as those of other species.

American wigeon (*Anas americana*)

Also known as the baldpate. This bird occurs in large numbers in the Chenier Plain. It has a large breeding range that roughly coincides with that of both the mallard and gadwall. The range extends northwest to the Bering Sea in Alaska (Kortright 1967). Wigeons arrive in the Chenier Plain in early October and remain until May. Average peak numbers are around 380,000 (10% of the Chenier Plain wintering waterfowl population).

Food habits of wigeons are similar to those of the gadwall (Kortright 1967 and Smith 1973); it dabbles for aquatic plants and algae, and eats sedge and grass seeds. It also eats wild celery and other submerged aquatic plants that are brought to the surface by diving ducks. This is an interesting specialization in food-gathering. In addition, gizzards may contain up to 10% animal food that may be a result of bottom-feeding. Wigeons prefer habitats similar to those of gadwalls, and like gadwalls are not common rice browsers.

Appendix 6.3(11) Continued

The wigeon harvest approaches 6% of the Chenier Plain total duck kill. They are preferred by hunters because of their flesh (Yancey 1959).

Green-winged teal (*Anas crecca*)

The green-winged teal is the second most numerous species on the Chenier Plain, comprising 15.8% of all waterfowl. They are the smallest species of waterfowl in Chenier Plain, and along with mallards, the most widely hunted. The green-winged teal is distributed from Alaska to Newfoundland during the breeding season. The species winters along both coasts of the U.S. and Mexico. They are common winter residents in the Chenier Plain between early October and late March; peak densities occur in December and January. Dabbling is limited to shallow water because of their small size. They feed on a wide variety of plants. Kortright (1967) reported the diet of the green-wing to include 39% sedges, 12% pondweeds, 11% grasses and 9% animal matter. Smith (1975), in a later survey, noted an increased amount of rice, 13.7%. Indeed, Bateman's surveys showed a large number of these birds in agricultural areas.

Green-winged teal are among the most adaptable of waterfowl. They consume many plant species and occupy a wide range of habitats. Green-wings cluster in flocks on sanctuaries to a greater extent than most ducks; reasons for this phenomenon have not been examined. It would be interesting to determine whether flocking is a response to an individual's relative ability to defend itself, which might be lower in the case of this small duck than for other larger species.

Blue-winged teal (*Anas discors*)

The distribution of blue-winged teal is uniformly more southern than any other major migratory species (Kortwright 1967). Their extreme response to cold weather is demonstrated by their early August arrival in the Chenier Plain (Lowery 1974a). During most years, blue-wings are transmigrants and depart from the Chenier Plain after a month or so for permanent wintering grounds as far south as Buenos Aires (Johnsgard 1975), a distance of 7,000 miles from their extreme northerly range. They return to the Chenier Plain in February on their way back to northern breeding grounds. The Louisiana Wildlife and Fisheries Commission has open a blue-winged teal season in early October, shortly after numbers normally begin to decline. In certain years blue-wings congregate in greater than average numbers on the Chenier Plain. Following Hurricane Audrey in 1957, a wintering population of about 250,000 birds was observed (Chamberlain 1959). The blue-winged teal probably breeds more frequently in the Chenier Plain than other migratory species.

Blue-wings alter their diets to utilize prevailing food supplies. Both animal matter (Bennett 1938) and grains are consumed (Smith 1973).

Northern shoveler (*Anas clypeata*)

Shovelers are ducks with large, spatulate bills which have comblike lamellae around their perimeter for straining water (Johnsgard 1975). Shovelers are found in higher salinity marshes than most dabblers. They prefer shallow turbid waters in which to feed. Crustaceans often may con-constitute up to 30 to 40% of the total diet, but shovelers largely prefer aquatics such as *Potamogeton*, and the vegetative parts of *Scirpus* and other rushes.

Shovelers are normally less numerous than other ducks in the Chenier Plain and reach peak numbers of around 150,000 in mid-winter. They arrive reasonably early in late September and migrate northward in late April.

Shovelers are not considered choice ducks by hunters because of their gamey quality.

Northern pintail (*Anas acuta*)

Pintails are the second most numerous of North American waterfowl species, following mallards. They breed from Mexico to Ellesmere Island, are the most common duck in Alaska, and are abundant throughout Canada and the northwestern and central United States. They winter throughout North America from around 40° North latitude south to Colombia. In Texas they were the most abundant winter duck during 1974-75. Pintails arrive in mid-October (Lowery 1974a) and leave early in the spring for breeding areas (Kortright 1967). The Louisiana Wildlife and Fisheries Commission reported in 1961 that pintails arrive in Louisiana before the bulk of the wintering duck population. It was the third most numerous duck in the Chenier Plain, accounting for 12.2% of all waterfowl.

Pintails consume diverse foodstuffs. Their long necks enable them to reach food in greater water depths than most dabblers, and they are frequent divers. In general, their diet and the mallard's are the most varied of all waterfowl, but pintails seem to prefer animal matter more than mallards (Johnsgard 1975). Unlike mallards they seem to prefer water when feeding on rice stubble, but they still are one of the most frequent consumers of rice. They are more adapted to higher salinities than mallards, and regularly feed in brackish areas.

Lesser scaup (*Aythya affinis*)

This is the most common diving duck found on the Louisiana coast. Although aerial surveys fail to indicate such, some estimates of their wintering populations exceed one million individuals (Louisiana Wildlife and Fisheries Commission 1961). Lesser scaup are frequently found on large open water bodies. Huge "rafts" of these birds can be seen on marsh lakes and in the Gulf. They occupy an interesting intermediate niche between more inland divers and the sea ducks. They appear not to need the large open water expanses used by the latter group year-round, but can tolerate seawater salinities and can utilize resources available to both groups.

Lesser scaup consume large quantities of animal matter. Preferred species include *Rangia cuneata*, a clam which is abundant in water of low salinity. In a comprehensive gut analysis, animal foods constituted a clear majority of the lesser scaup's diet; percentages varied from 93.5% for premigratory birds to 63.7% for birds on the wintering grounds. Aquatic plants composed the remainder.

Scaup are numerous on the Canadian prairies, and are found in western Alaska. They arrive in the Chenier Plain in mid-October and depart in late April. Their winter range resembles that of the blue-winged teal, but it is not as southerly (Johnsgard 1975). Hunting pressure on scaup is not great, both because of the relative inaccessibility of their habitat and because they are considered to be a low quality table duck by Chenier Plain hunters.

Other Species

Because of their small contribution to the Chenier Plain waterfowl population, the following are considered in less detail than the previous species.

Wood duck (*Aix sponsa*)

Wood ducks are perching ducks and are numerous in many regions of the eastern United States, although no population figures are available for the Chenier Plain. The species inhabits swamps and bottomland forests, where it nests in trees. Wood ducks consume fruits, nuts, and green tree shoots and dabble for seeds and vegetative parts of aquatic plants. The species nests in the Chenier Plain.

Wood ducks are popular game birds and are highly accessible to hunters. In the Louisiana portion of the Chenier Plain, they account for 1% of the total duck harvest.

Ring-necked duck (*Aythya collaris*)

The second most numerous of Chenier Plain diving ducks, these birds are common breeders in the Great Lakes region of the United States and across midwestern Canada (Johnsgard 1975). About 20% of the North American population winters on the Chenier Plain. The species is present in the Chenier Plain from late October to early April, and feeds on submerged aquatics, bulrush seeds, and molluscs. The latter food composes about 25% of the diet. Ring-necked ducks prefer freshwater conditions and eat more rice than other diving ducks.

Hooded merganser (*Lophodytes cucullatus*)

The hooded merganser is a common nester in the Chenier Plain, and like the wood duck, nests in tree cavities.

Whereas Stewart (1962) reported that hooded mergansers evidently avoided salt water, Bateman's surveys indicated they used brackish and salt marshes more than any other duck. Food habits of the hooded merganser are described in Appendix 6.3(13). The species is rarely hunted, because of the poor palatability of their flesh.

Fulvous tree-duck (*Dendrocygna bicolor*)

The rarest of all Chenier Plain waterfowl, these ducks have the most tropical range, rarely venturing north of the coastal rice prairies of Louisiana. They migrate south along the Gulf coast to the Bay of Campeche, Mexico in winter (Kortwright 1967). They differ morphologically from other ducks by their long necks and stout legs, and are actually closer in phylogeny to geese than ducks.

Fulvous tree ducks appear to favor seeds and grains, such as *Echinochloa* and rice, but are adept at both diving and dabbling (Johnsgard 1975).

Redhead (*Aythya americana*)

Although common in coastal marshes of south Texas and the Chandeleur Islands off the Louisiana coast, the redhead duck is rare in the Chenier Plain. This diving duck is commonly found along parts of the Gulf coast between November and February. Evidence suggests the species is declining in numbers (Louisiana Wildlife and Fisheries Commission 1961).

Canvasback (*Aythya valisineria*)

The canvasback is the largest of diving ducks, and is popular with hunters. The species is rare in the Chenier Plain, and populations are declining (Louisiana Wildlife and Fisheries Commission 1961). The canvasback feeds primarily of wild celery and other aquatic plants.

American coot (*Fulica americana*)

American coots are ducklike members of the rail family, and resemble their relatives in most biological respects, although they are easily confused with some diving ducks by the uninitiated bird watcher. Coots prefer freshwater marshes where they feed on aquatic plants. They migrate from their breeding grounds across northern North America in early September, and are common in the Chenier Plain until late spring. Some have been known to nest in the Chenier Plain. They winter in large numbers here, but are not considered a desirable game bird. They are poor flyers and require long distances to become airborne.

Methodology and Applications

Much of the quantitative analyses of waterfowl population dynamics were adopted from the Louisiana periodic Waterfowl Inventory, an aerial survey conducted by Hugh A. Bateman, Jr., waterfowl biologist with the Louisiana Wildlife and Fisheries Commission. This survey is a continuation of aerial surveys initiated by Richard K. Yancey in 1949. The present survey is more statistically sound, from a sampling viewpoint, than previous waterfowl counts in Louisiana.

Since September 1969, the survey has been conducted with a Cessna aircraft, with observer and pilot, each counting birds on their respective sides of the plane. The plane is flown at an altitude of approximately 200 ft. Birds on large open water bodies are not counted, since the aircraft must fly at altitudes of 900 ft over these situations for safety reasons.

Transects follow longitudinal lines at 7.5' intervals with termini at U.S. Highway 90 in the north, and the Gulf coast line in the south. From Marsh Island east, the transect interval is increased to 15' of longitude, because of the subsequently great increase in average transect length.

Appendix 6.3(11) Concluded

Transect width is one-quarter mile. These transects were originally established by Chabreck et al. (1968b) for the purpose of mapping vegetation types in the Louisiana coastal area. Eleven species of ducks and coots were counted.

Weather permitting, flights are attempted on a monthly basis, although there is a great deal of variability in both time between surveys and the number of days required to complete a single survey. With few exceptions, the interval between surveys was 9 to 46 days and the time required to complete a survey ranged from 5 to 14 days. There were no flights from March to July (with the exception of 1971 when surveys were flown all months except July). The primary application of the survey has been in setting hunting regulations; therefore, census emphasis has been placed on migratory species that constitute the bulk of Louisiana's waterfowl population. Survey coverage is complete for all years between September and January, and much of the graphical output uses only this interval.

Appendix 6.3(12). List of plants by habitat for Rockefeller Refuge (Adams 1956).

	HABITAT					
Plant	Fresh	Brackish	Salt	Beach	Levee	Chenier
Gulfcoast waterhemp (*Acnida alabamensis*)		X			X	
Alligatorweed (*Alternanthera philoxeroides*)	X					
Giant ragweed (*Ambrosia trifida*)					X	X
Slim aster (*Aster subulatus*)	X	X	X		X	X
Saline aster (*A. tenuifolius*)		X	X		X	
Salt cedar (*Atriplex* sp.)		X	X	X	X	
Buckrush (*Baccharis halimifolia*				X	X	
Sea oxeye (*Borrichia frutescens*)		X	X	X	X	
Spiny thistle (*Cardius* sp.)		X			X	
Hackberry (*Celtis laevigata*)						X
Sawgrass (*Cladium jamaicense*)	X	X	X			
Dodder (*Cuscuta* sp.)				X	X	X
Umbrella sedge (*Cyperus filicinus*)	X	X	X		X	
Rattlebox (*Daubentonia drummondii*)					X	X
Saltmarsh grass (*Distichlis spicata*)		X	X			
Wild millet (*Echinochloa walteri*)		X			X	

continued

Appendix 6.3(12). Continued

	Fresh	Brackish	Salt	Beach	Levee	Chenier
Yerta-de-tage (*Eclipta alba*)	X	X				
Water-hyacinth (*Eichhornia crassipes*)	X	X				
Common spikerush (*Eleocharis palustris*)		X	X			
Dwarf spikerush (*E. parvula*)		X	X			
Seaside heliotrope (*Heliotropium curassavicum*)	X	X	X	X	X	
Rosemallow (*Hibiscus lasiocarpus*)	X	X			X	X
Spiderlily (*Hymenocallis crassifolia*)	X					
Marsh morningglory (*Ipomea sagittata*)		X				
Marsh morningglory (*I. stolonifera*)		X				
Giant blue iris (*Iris giganticaerulea*)	X	X				
Swampweed (*Iva ciliata*)					X	X
Bigleaf swampweed (*Iva frutescens*)			X	X	X	X
Black rush (*Juncus roemerianus*)		X	X	X		
False rosemallow (*Kosteletzkya virginica*)	X	X	X		X	
Duckweed (*Lemna minor*)	X	X				
Matrimonyvine (*Lycium halimfolium*)					X	X
Marsh loosestrife (*Lythrum lineare*)		X	X		X	

continued

Appendix 6.3(12). Concluded

	Fresh	Brackish	Salt	Beach	Levee	Chenier
Saltwort (*Salicornia bigelovii*)			X	X		
American 3-square (*Scirpus americanus*)	X					
California bulrush (*S. californicus*)	X	X				
Olney 3-square (S. olneyi)	X	X	X			
Leafy 3-square (*S. robustus*)		X	X			
Butterweed (*Senecio glabellus*)	X	X				
Tall sesban (*Sesbania exaltata*)					X	X
Giant foxtail (*Setaria magna*)	X	X			X	
Sawbriar (*Smilax* sp.)					X	
Seaside goldenrod (*Solidago sempervirens*)	X	X	X	X	X	
Oystergrass (*Spartina alterniflora*)	X	X	X	X	X	
Hogcane (*S. cynosuroides*)	X	X				
Saltmarsh wiregrass (*S. patens*)		X	X			
Broadleaf cattail (*Typha latifolia*)	X	X				
Louisiana vetch (*Vicia ludoviciana*)					X	X
Cowpea (*Vigna repens*)	X	X			X	
Giant cutgrass (*Zizaniopsis miliacea*)	X	X				

Appendix 6.3(13). Representative vertebrate species of Impounded Marsh Habitat in the Chenier Plain.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
AMPHIBIANS			
Notophthalmus viridescens Central newt			
Amphiuma tridactylum Three-toed amphiuma			
Siren intermedia Lesser siren			
Eurycea quadridigitata Dwarf salamander			
Bufo valliceps Gulf coast toad			
Bufo woodhousei Woodhouse's toad			
Acris crepitans Northern cricket frog			
Hyla cinerea Green tree frog	insects (Wright and Wright 1949)		
Hyla crucifer Spring peeper			
Hyla squirella Squirrel tree frog			
Pseudacris triseriata Upland chorus frog			
Rana catesbeiana Bullfrog			

continued

Appendix 6.3(13). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Rana clamitans Bronze frog			
Rana grylio Pig frog			
Rana utricularia Southern leopard frog			
Gastrophryne carolinensis Eastern narrow-mouthed toad			
REPTILES			
Alligator mississippiensis American alligator	61% crayfish; also birds, fiddler crabs, fish, insects, muskrats, turtles, shrimp, grasses, snails (Chabreck 1971)		0.07/acre (Joanen and McNease 1972)
Chelydra serpentina Snapping turtle	fish (35.4%), other vertebrates (1.1%, carrion (19.6%), invertebrates (7.8%), plant material (36.2%) (Carr 1952)		
Macroclemys temmincki Alligator snapping turtle	fish, frogs, snakes, other turtles, mussels, various aquatic grasses (Carr 1952)		
Kinosternon subrubrum Mississippi mud turtle	insects, small snails (Carr 1952)		
Sternotherus odoratus Stinkpot	fish (46.3%), mollusks (40.1%), also crayfish, insects, plant material for Michigan (Carr 1952)		
Chrysemys concinna Mobile cooter			
Chrysemys floridana Missouri slider			

continued

Appendix 6.3(13). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Chrysemys picta Southern painted turtle	juvenile: 13% plant, 85% animal adult: 88% plant, 10% animal (Carr 1952)		
Chrysemys scripta Red-eared turtle	juvenile: 30% plant, 70% animal (e.g., amphipods) adult: 89% plant, 11% animal (e.g., crayfish) (Carr 1952)		
Delrochelys reticularia Chicken turtle	tadpoles, crayfish, plant material (Carr 1952)		
Graptemys kohni Mississippi map turtle			
Graptemys pseudogeographica Sabine map turtle			
Malademys terrapin Diamondback terrapin	crustaceans, mollusks, roots of marsh plants, carrion (Carr 1952)		
Trionyx spiniferus Spiny softshell	carnivorous		
Coluber constrictor Racer	insects, frogs, snakes, young birds (Wright and Wright 1957)	Breeds: May Hatch: July-Sept. (Wright and Wright 1957)	
Farancia abacura Mud snake	*Amphiuma*, *Siren*, frogs (Wright and Wright 1957)		
Lampropeltis getulus Speckled king snake	other snakes, small birds, lizards, mice, rats (Wright and Wright 1957)		
Natrix cyclopion Green water snake	Gambusia (77.6%); other fish (18.6%); tadpoles (3.5%) (Mushinsky and Hebrard 1976)	Mar.-Oct. (Mushinsky and Hebrard, unpublished manuscript)	
Natrix fasciata confluens Broad-banded water snake	fish (86.9%); frogs and toads (6.4%); tadpoles (4.8%) (Mushinsky and Hebrard 1976)	Mar.-Sept. (Mushinsky and Hebrard, unpublished manuscript)	
Natrix fasciata clarki Gulf salt marsh snake			

continued

Appendix 6.3(13). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Natrix erythrogaster Yellow-bellied water snake			
Natrix rhombifera Diamondback water snake			
Regina grahamii Graham's water snake	crayfish (100%) (Mushinsky and Hebrard 1976)	Mar.-Sept. (Mushinsky and Hebrard, unpublished manuscript)	
Regina rigida Glossy water snake	Siren, fish, crayfish (Wright and Wright 1957)		
Storeria dekayi Brown snake	earthworms, snails, insects, small frogs, fish (Wright and Wright 1957)		
Thamnophis proximus Western ribbon snake	insects, fish, frogs, salamanders, mice, toads (Wright and Wright 1957)		
Thamnophis sirtalis Garter snake	earthworms, mollusks, insects, fish, salamanders, toads, frogs, small mammals, small birds (Wright and Wright 1957)		
Agkistrodon piscivorus Cottonmouth	fish, salamanders, frogs, reptiles, birds, mammals (Wright and Wright 1957)		
BIRDS			
Podiceps auritus Horned grebe	shrimp and other crustaceans, small fish, some plant material, feathers (Bent 1919)	Oct.-Apr. (Lowery 1974a)	
Podiceps nigricollis Eared grebe	insects, shrimp, some water plants, feathers (Bent 1919)	Oct.-May (Lowery 1974a)	
Podilymbus podiceps Pied-billed grebe	mostly animal; aquatic worms and insects, snails small frogs and fish; plants: seeds and soft parts (Bent 1919)	Oct.-Apr. (Lowery 1974a)	
Pelecanus erythrorhynchus American white pelican	fish (Bent 1922)	Sept.-May (Lowery 1974a)	

continued

Appendix 6.3(13). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Phalacrocorax auritus Double-crested cormorant	mostly fish; rarely crustaceans, mollusks, eel grass (Bent 1922)	Sept.-Apr.	"Blue List" Nat. Aud. Soc. (1976)
Phalacrocorax olivaceus *Olivaceous cormorant*		Year-round	
Anhinga anhinga Anhinga	fish, leeches, shrimp, crayfish, insects, salamanders, frogs, young turtles and alligators, snakes (Bent 1922)	Mar.-Oct. (Lowery 1974a)	
Ardea herodias Great blue heron	mostly fish; also crustaceans, insects, frogs, lizards, snakes, birds, small mammals (Bent 1926)	Year-round (Lowery 1974a)	
Butorides striatus Green heron	small fish, earthworms, insects, tadpoles, frogs, snakes, small mammals (Bent 1926)	Mar.-Oct. (Lowery 1974a)	
Florida caerulea Little blue heron	crayfish, small crabs, insects, fish, frogs, lizards (Bent 1926)	Mar.-Oct. (Lowery 1974a)	
Bubulcus ibis Cattle egret	insects (Lowery 1974)	Year-round (Lowery 1974a)	Invaded La. in 1955
Casmerodius albus Great egret	small fish, snails, fiddlers, insects, frogs, lizards, small snakes, mice, some plant material (Bent 1926)	Mar.-Nov. (Lowery 1974a)	
Egretta thula Snowy egret	shrimp, small fish, fiddlers, snails, insects, crayfish,	Mar.-Oct. (Lowery 1974a)	
Hydranassa tricolor Louisiana heron	slugs, snails, crayfish, insects, small fish, lizards, frogs (Bent 1926)	Mar.-Nov. (Lowery 1974a)	
Nycticorax nycticorax Black-crowned night heron	mostly fish (alive or dead), worms, crustaceans, insects (Bent 1926)	Mar.-Sept. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Nyctanassa violacea Yellow-crowned night heron	snails, crayfish, crabs, fish, small reptiles, small mammals and birds (Bent 1926)	Mar.-Sept. (Lowery 1974a)	
Ixobrychus exilis Least bittern	slugs, leeches, insects, small fish, tadpoles, small frogs, lizards, small mammals	Apr.-Sept. (Lowery 1974a)	

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Appendix 6.3(13). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Botaurus lentiginosus American bittern	mollusks, crayfish, insects, small fish, frogs, lizards, small snakes, mice (Bent 1926)	Oct.-May (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Mycteria americana Wood stork	fish, aquatic reptiles, insects (Bent 1926)	Jun.-Sept. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Plegadis falcinellus Glossy ibis	insects, crayfish, young snakes (Bent 1926)	Year-round (Lowery 1974a)	
Plegadis chihi White-faced ibis	earthworms, crayfish, mollusks, crayfish, insects, small fish and frogs, newts, leeches (Bent 1926)	Year-round (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Eudocimus albus White ibis	mostly crayfish; also other crustaceans, slugs, snails, small snakes, insects (Bent 1926)	Mar.-Sept. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Ajaia ajaja Roseate spoonbill	fish, shrimp, insects (Bent 1926)	Year-round (Lowery 1974a)	
Branta canadensis Canada goose	almost wholly plants: aquatic plants, marsh grasses, sedges; some mollusks, crustaceans (Bent 1925)	Oct.-Feb. (Lowery 1974a)	Introduced at Rockefeller Refuge
Anser albifrons White-fronted goose	grain, tender shoots, occasional insects (Bent 1925)	Nov.-Mar. (Lowery 1974a)	
Chen caerulescens Snow goose	almost wholly plants: grain, roots and culms of grasses; some insects, mollusks (Bent 1923)	Oct.-Apr. (Lowery 1974a)	
Dendrocygna bicolor Fulvous tree duck	mostly seeds of grasses and weeds; also grasses, grain (Bent 1923)	Apr.-Sept. (Lowery 1974)	
Anas platyrhynchos Mallard	90% plant: sedges, grasses, smartweeds, pondweeds, duckweeds, tubers, mast; 10% animal: insects, crustaceans, mollusks; fish (Bent 1923)	Oct.-Mar. (Lowery 1974a)	
Anas rubripes Black duck	mast, grain, mollusks, crustaceans (Bent 1923)	Oct.-Mar. (Lowery 1974a)	
Anas fulvigula Mottled duck	40% animal: mollusks, insects, crayfish, small fish 60% plant: mostly grasses (plants and seeds (Bent 1926)	Year-round (Lowery 1974a)	

continued

Appendix 6.3(13). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Anas strepera Gadwall	principally plants (Bent 1953)	Oct.-Mar. (Lowery 1974a)	
Anas acuta Northern pintail	13% animal: mollusks, crustaceans, insects 87% plant: pondweed, sedges and grasses (60%); other (27%) (Bent 1923)	Oct.-Mar. (Lowery 1974a)	
Anas crecca Green-winged teal	10% animal: insects, mollusks, crustaceans 90% plant: sedges, pondweeds and grasses (62%); other (28%) (Bent 1923)	Oct.-Mar. (Lowery 1974a)	
Anas discors Blue-winged teal	30% animal: worms, mollusks, insects, tadpoles 70% plant: sedges, pondweeds and grasses (43.6%); other (26.4%) (Bent 1923)	Feb.-Apr.; Sept.-Nov. (Lowery 1974a)	
Anas clypeata Northern shoveler	animal: worms, small mollusks, insects, shrimp, small fish, small frogs; plant: buds and young shoots of rushes and other aquatics; grasses (Bent 1923)	Oct.-Apr. (Lowery 1974a)	
Anas americana American wigeon	90% plant, 10% animal (from Sept.-Apr.) (Bent 1923)	Oct.-Apr. (Lowery 1974a)	
Aythya americana Redhead	stems and buds of *Valisineria*, other aquatic plants, marine animals (Bent 1923)	Nov.-Feb. (Lowery 1974a)	
Aythya collaris Ring-necked duck	19% animal: insects, mollusks; 81% plant: aquatic plants, sedges, grasses, smartweeds (Cottam 1939)	Oct.-Apr. (Lowery 1974a)	
Aythya valisineria Canvasback	*Valisineria*, other aquatic plants, water lily and lotus seeds, small fish, crustaceans, mollusks, insects (Bent 1923)	Oct.-Mar. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Aythya marila Greater scaup	crustaceans, mollusks, aquatic plants (Bent 1923)	Nov.-Apr. (Lowery 1974a)	
Aythya affinis Lesser scaup	similar to *A. marila* (Bent 1923)	Oct.-Apr. (Lowery 1974a)	
Bucephala clangula Common goldeneye	similar to scaup, but also minnows, small frogs, tadpoles, crayfish, snails, insects (Bent 1923)	Nov.-Feb. (Lowery 1974a)	

continued

Appendix 6.3(13). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Bucephala albeola Bufflehead		Nov.-Mar. (Lowery 1974a)	
Clangula hyemalis Oldsquaw	88% animal: crustaceans, mollusks, insects, fish; 12% plant: grasses, pondweeds, misc. (Cottam 1939)	Nov.-Apr. (Lowery 1974a)	
Melanitta deglandi White-winged scooter	94% animal: mollusks; crustaceans, insects, fish; 6% plant: aquatic plants (Cottam 1939)	Oct.-May (Lowery 1974a)	
Oxyura jamaicensis Ruddy duck	72% plant: aquatic plants, grasses, sedges; 28% animal: insects, mollusks, crustaceans (Cottam 1939)	Nov.-Apr. (Lowery 1974a)	
Lophodytes cucullatus Hooded merganser	mostly insects; also small fish, frogs, mollusks, crayfish, roots of aquatic plants, seeds, grain (Bent 1923)	Nov.-Apr. (Lowery 1974a)	
Mergus serrator Red-breasted merganser	mostly fish; also crustaceans and mollusks (Bent 1923)	Nov.-Apr. (Lowery 1974a)	
Circus cyaneus Marsh hawk	small mammals, herons, ducks, coots, rails, shorebirds, songbirds	Sept.-Apr. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Pandion haliaetus Osprey	bowfin, carp, catfish, eel, flounder, goldfish, menhaden, mullet, pickerel, shad, sunfish. No carrion (Bent 1937)	Sept.-Dec.; Feb.-May (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Falco peregrinus Peregrine falcon	primarily birds; also mammals, insects (Bent 1937)	Sept.-May (Lowery 1974a)	Endangered
Falco columbarius Merlin	mostly birds: green-winged teal, shorebirds, small chickens, various songbirds; also insects, spiders, reptiles, mice, pocket gophers, squirrels, bats (Bent 1937)	Sept.-May (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Falco sparverius American kestrel	insects, amphibians, reptiles, birds, mammals (Bent 1937)	Sept.-Apr. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Rallus elegans King rail	grass seeds, insects, slugs, leeches, tadpoles, crayfish (Bent 1926)	Year-round (Lowery 1974a)	
Rallus longirostris Clapper rail	small crabs, snails, small fish, aquatic insects, plants (Bent 1926)	Year-round (Lowery 1974a)	

continued

Appendix 6.3(13). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Rallus limicola Virginia rail	earthworms, crayfish, insects, snails, small fish, some grass seeds (Bent 1926)	Oct.-Apr. (Lowery 1974a)	
Porzana carolina Sora	small mollusks, insects, seeds (Bent 1926)	Sept.-May (Lowery 1974a)	
Coturnicops noveboracensis Yellow rail		Oct.-May (Lowery 1974a)	
Laterallus jamaicensis Black rail		Nov.-Apr. (Lowery 1974a)	
Porphyrula martinica Purple gallinule	rice, other seeds, worms, mollusks (Bent 1926)	Apr.-Sept. (Lowery 1974a)	
Gallinula chloropus Common gallinule	seeds, roots, soft parts of aquatic plants, snails insects, worms (Bent 1926)	Apr.-Nov. (Lowery 1974a)	
Fulica americana American coot	leaves, fronds, seeds and roots of aquatic plants; wild celery, algae; worms, snails, insects, small fish, tadpoles (Bent 1926)	Sept.-Apr. (Lowery 1974a)	
Himantopus mexicanus Black-necked stilt	99% animal: mostly insects; also crayfish, snails, tiny fish. 1% plant: seeds of aquatic and marsh plants (Bent 1927)	Mar.-Oct. (Lowery 1974a)	
Recurvirostra americana American avocet	65% animal: insects. 35% plant: seeds of aquatic and marsh plants (Bent 1927)	Sept.-May (Lowery 1974a)	
Charadrius semipalmatus Semipalmated plover	worms, small mollusks, crustaceans, insects (Bent 1929)	Mar.-May; Jul.-Nov. (Lowery 1974a)	
Charadrius vociferus Killdeer	98% insects and other animal matter (e.g., snails, crabs, crayfish); 2% plant: weed and grass seeds (Bent 1929)	Sept.-May (Lowery 1974a)	
Pluvialis dominica American golden plover	almost entirely insects; also small mollusks and crustaceans; some grass seeds, seaweed (Bent 1929)	Mar.-May (Lowery 1974)	
Pluvialis squatarola Black-bellied plover	marine worms, small mollusks, crustaceans, insects	Sept.-May (Lowery 1974a)	

continued

Appendix 6.3(13). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Limosa haemastica Hudsonian godwit	worms, mollusks, various insects, crustaceans, other small marine life	Apr.-Jun. (Lowery 1974a)	
Limosa fedoa Marbled godwit	insects, mollusks (Bent 1927)	Oct.-Nov. (Lowery 1974a)	
Nemenius phaeopus Whimbrel	earthworms, sandworms, insects, mollusks, small crustaceans, some plant material	Apr.-May (Lowery 1974a)	
Tringa melanolenca Greater yellowlegs	small fish, occasionally insects (Bunt 1927)	Feb.-May; Aug.-Nov. (Lowery 1974a)	
Tringa flavipes Lesser yellowlegs	mostly insects; also small crustaceans, small fish worms (Bent 1927)	Feb.-May; Aug.-Nov. (Lowery 1974a)	
Tringa solitaria Solitary sandpiper	insects, spiders, worms, small crustaceans, small frogs (Bent 1929)	Mar.-Apr.; Aug.-Oct. (Lowery 1974a)	
Catoptropherus semipalmatus Willet	worms, insects, small crabs, small mollusks, small fish, grasses, tender roots, seeds, rice (Bent 1929)	Year-round (Lowery 1974a)	
Actitis macularia Spotted sandpiper	insects, occasionally small fish	Mar.-Apr.; Aug.-Oct. (Lowery 1974a)	
Steganopus tricolor Wilson's phalarope	aquatic insects and their larvae; amphipods; seeds of aquatic plants (Bent 1927)	Apr.-May; Jul.-Sept.	
Capella gallinago Common snipe	mostly earthworms, also other worms, insects, some seeds of marsh plants (Bent 1927)	Oct.-Apr. (lowery 1974a)	
Limnodromus griscus Short-billed dowitcher	worms, insects, fish eggs, small mollusks, seeds and roots of aquatic plants (Bent 1927)	Mar.-May; Sept.-Nov. (Lowery 1974a)	
Limnodromus scolopaceus Long-billed dowitcher	insect larvae, some plant material (Bent 1927)	Oct.-May (Lowery 1974)	
Calidris pusilla Semipalmated sandpiper	small mollusks, worms, insects, traces of plant material (Bent 1927)	Apr.-May; Sept.-Nov. (Lowery 1974a)	

continued

Appendix 6.3(13). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Calidris mauri Western sandpiper	insects, marine worms, small snails (Bent 1927)	Aug-May (Lowery 1974a)	
Calidris minutilla Least sandpiper	mostly insects; also small crustaceans, worms	Aug.-Apr. (Lowery 1974a)	
Calidris fuscicollis White-rumped sandpiper	78% animal: snails, marine worms 22% plant: seeds (Bent 1927)	Apr.-Jun. (Lowery 1974a)	
Calidris bairdii Baird's sandpiper	insects, amphipods, algae (Bent 1927)	Mar.-May; Jul.-Oct. (Lowery 1974a)	
Calidris melanotos Pectoral sandpiper	insects (66%); amphipods (22.3%); algae (10.5%); also other animals, seeds (Bent 1927)	Mar.-May; Aug.-Oct. (Lowery 1974a)	
Calidris alpina Dunlin	small mollusks, small crustaceans, insects, marine worms, occasionally seeds (Bent 1927)	Oct.-May (Lowery 1974a)	
Calidris himantopus Stilt sandpiper	animal (70%): small worms, mollusks, insects plant (30%): seeds (Bent 1927)	Apr.-May (lowery 1974a)	
Larus argentatus Herring gull	dead fish and other detritus; live fish, crustaceans mollusks, echinoderms, worms, insects (Bent 1921)	Nov.-Apr. (Lowery 1974a)	
Larus delawarensis Ring-billed gull	refuse, insects (Bent 1921)	Oct.-Apr. (Lowery 1974a)	
Larus atricilla Laughing gull	mostly small fish; also eggs of other seabirds, refuse	Year-round (Lowery 1974a)	
Larus philadelphia Bonaparte's gull	small fish, crustaceans, marine worms, insects (Bent 1921)	Oct.-Apr. (Lowery 1974a)	
Gelochelidon nilotica Gull-billed tern	insects (Bent 1921)	Oct.-Apr. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Sterna forsteri Forster's tern	insects, floating carrion (Bent 1921)	Year-round (Lowery 1974a)	

continued

Appendix 6.3(13). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Sterna hirundo Common tern	almost wholly small fish; also shrimp and aquatic insects (Bent 1921)	Sept.-May (Lowery 1974a)	
Sterna albifrons Least tern	small fish; some crustaceans and insects (Bent 1921)	Apr.-Aug. (Lowery 1974a)	
Sterna maxima Royal tern	almost wholly small fish; also crabs, shrimp (Bent 1921)	Year-round (Lowery 1974a)	
Sterna caspia Caspian tern	almost wholly small fish; also shrimp and other surface-swimming aquatic life (Bent 1921)	Year-round (Lowery 1974a)	
Chlidonias niger Black tern	small fish, insects (Bent 1921)	Apr.-Sept. (Lowery 1974a) (non-breeding)	
Asio flammeus Short-eared owl	mostly small mammals, also small birds, insects (Bent 1937)	Oct.-May (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Chordeiles minor Common nighthawk	insects, mostly flying (Bent 1940)	Apr.-Oct. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Chaetura pelagica Chimney swift	flying insects (Bent 1940)	Mar.-Oct. (Lowery 1974a)	
Megaceryle alcyon Belted kingfisher	almost wholly fish; also insects, crustaceans, mollusks, amphibians, small reptiles, birds, mice, berries (Bent 1940)	Sept.-Apr. (Lowery 1974a)	
Iridoprocne bicolor Tree swallow	81% animal: insects and spiders 21% plant: seeds and berries (Bent 1942)	Sept.-May (Lowery 1974a)	
Riparia riparia Black swallow	insects (Bent 1942)	Apr.-May; Jul.-Oct. (Lowery 1974a)	
Stelgidopteryx ruficollis Rough-winged swallow	insects (Bent 1942)	Mar.-Nov.	
Hirundo rustica Barn swallow	99% animal: insects, some spiders and snails (Bent 1942)	Mar.-May; Aug.-Nov. (Lowery 1974a)	
Petrochelidon pyrrhonota Cliff swallow	99% animal: insects (Bent 1942)	Apr.-Jun. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)

continued

Appendix 6.3(13). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Corvus ossifragus Fish crow	carrion, crustaceans, fish, bird eggs, insects; berries tree fruits, seeds, some grain (Bent 1946)	Year-round (Lowery 1974a)	
Cistothorus palustris Marsh wren	insects; especially Coleoptera and Diptera (Bent 1948)	Year-round (Lowery 1974a)	
Cistothorus platensis Sedge wren	insects, spiders (Bent 1948)	Oct.-Mar. (Lowery 1974a)	
Anthus spinoletta Water pipit		Nov.-Mar. (Lowery 1974a)	
Geothlypis trichas Common yellowthroat	mostly insects, a few seeds (Bent 1953)	Mar.-Oct. (Lowery 1974a)	
Delichonyx pryzivorus Bobolink	57% animal: insects, spiders, myriapods; 43% plant: weed seeds, grain (Bent 1958)	May (Lowery 1974a)	
Agelaius phoeniceus Red-winged blackbird	73% plant: fruit, grain, weed seeds; 27% animal: mostly insects, some spiders and myriapods (Bent 1953)	Year-round (Lowery 1974a)	
Quiscalus mexicanus Great-tailed grackle	insects, fish, worms, small lizards, tadpoles, eggs and young of other birds (Bent 1958)	Mar.-Aug. (Lowery 1974a)	
Quiscalus major Boat-tailed grackle	insects, tadpoles, frogs, small fish, spiders (Bent 1958)	Year-round (Lowery 1974a)	
Passerculus sandwichensis Savannah sparrow	92% plant: seeds; 8% animal: mostly insects (winter) (Bent 1968)	Oct.-Apr. (Lowery 1974a)	
Ammospiza caudacuta Sharp-tailed sparrow	81% animal: insects, amphipods, spiders, small snails; 19% plant: grasses, seeds (Bent 1968)	Nov.-Mar. (Lowery 1974a)	
Ammospiza maritima Seaside sparrow	marine worms, crustaceans, insects, spiders, mollusks, weed and grass seeds (Bent 1968)	Year-round (Lowery 1974a)	
Melospiza georgiano Swamp sparrow	55% insects; 45% (Bent 1968)	Sept.-May (Lowery 1974a)	

continued

Appendix 6.3(13). Concluded.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
MAMMALS			
Didelphis virginiana Virginia opossum	insects, birds, carrion, plant material (Lowery 1974b)	Breeds in Jan.-Feb. (Lowery 1974b)	
Myotis austroriparius Southeastern myotis	insects (Lowery 1974b)	Active year-round in warm weather; mating in spring (Lowery 1974b)	
Lasiurus borealis Red bat	insects (Lowery 1974b)	Active year-round in warm weather; young born May-June (Lowery 1974b)	
Lasiurus seminolus Seminole bat	insects (Lowery 1974b)	Active year-round in warm weather; young born in June (Lowery 1974b)	
Dasypus novemcinctus Nine-banded armadillo	insects, plant material (Lowery 1974b)	Breeds in Jul.-Aug. (Lowery 1974b)	
Sylvilagus aquaticus Swamp rabbit	green plants (Lowery 1974b)	Breeds Jan.-Sept. (Lowery 1974b)	
Oryzomys palustris Marsh rice rat	plant material, insects, crustaceans, bird eggs and young (Lowery 1974b)	Breeds Mar.-Oct. (Lowery 1974b)	
Ondatra zibethicus Common muskrat		Active year-round; breeding peaks Nov. and Mar. (Lowery 1974b)	
Myocastor coypus Nutria	aquatic vegetation (Lowery 1974b)		
Procyon lotor Northern raccoon	animals and plant material (Lowery 1974b)	Breeds Dec.-Jan. (Lowery 1974b)	
Mustela vison North American mink	crayfish, rodents, birds, fish, crabs, frogs (Lowery 1974b)	Active year-round births in early spring (Lowery 1974b)	
Lutra canadensis Nearctic river otter	crabs, crayfish, fish, frogs, turtles, snakes (Lowery 1974b)	Breeds in late fall (Lowery 1974b)	
Canis rufus Red wolf	nutria, swamp rabbit, cottontail, rice rat, cotton rat, muskrat (Riley and McBride 1972)	Breeds Jan.-Feb.; Births Mar.-Apr. (Riley and McBride 1972)	Endangered
Odocoileus virginianus White-tailed deer	plant material (Lowery 1974b)	Breeds: Sept.-Mar. (Lowery 1974b)	

Appendix 6.3(14). Species of epiphytic algae found in Salt Marsh Habitat.

Macrophytes (Kapraun 1974) - Chenier Plain

- *Bostrychia radicans*
- *Polysiphonia subtilissima*
- *Enteromorpha* sp.
- *Ectocarpus* sp.
- *Chaetomorpha*
- *Blidingia marginata*
- *Chaetomorpha linum*
- *Enteromorpha flexuosa*
- *Rhizoclonicum kochianum*

Cyanophyta (Stowe 1972) - S.E. Louisiana

- *Oscillatoria*
- *Lyngbya*
- *Spirulina*

Diatoms (Stowe 1972) - S.E. Louisiana

- *Anchnanthes brevipes*
- *Amphiprora* sp.
- *Amphora* sp.
- *Amphora cymbifera*
- *Amphora granulata*
- *Amphora ventricosa*
- *Bacillaria paradoxa*
- *Caloneis liber*
- *Cocconeis* sp.
- *C. placentula*
- *C. scutellum*
- *Coscinodiscus* sp.
- *Cyclotella* sp.
- *Cylindrotheca closterium*
- *C. fusiforma*
- *Denticula* sp.
- *Diploneis* sp.
- *D. interrupta*
- *D. smithii*
- *Grammatophora marina*
- *Gyrosigma* sp.
- *Mastogloia* sp.
- *Melosira* sp.
- *Navicula* sp.
- *N. calica*
- *N. rostellata*
- *N. trompii*
- *Nitzschia* sp.
- *N. accuminata*
- *N. constricta*
- *N. grossestriata*
- *Opephora schwartzii*
- *Pleurosigma* sp.
- *Rhopalodia gibberula*
- *Surirella fastuosa*
- *Synedra* sp.

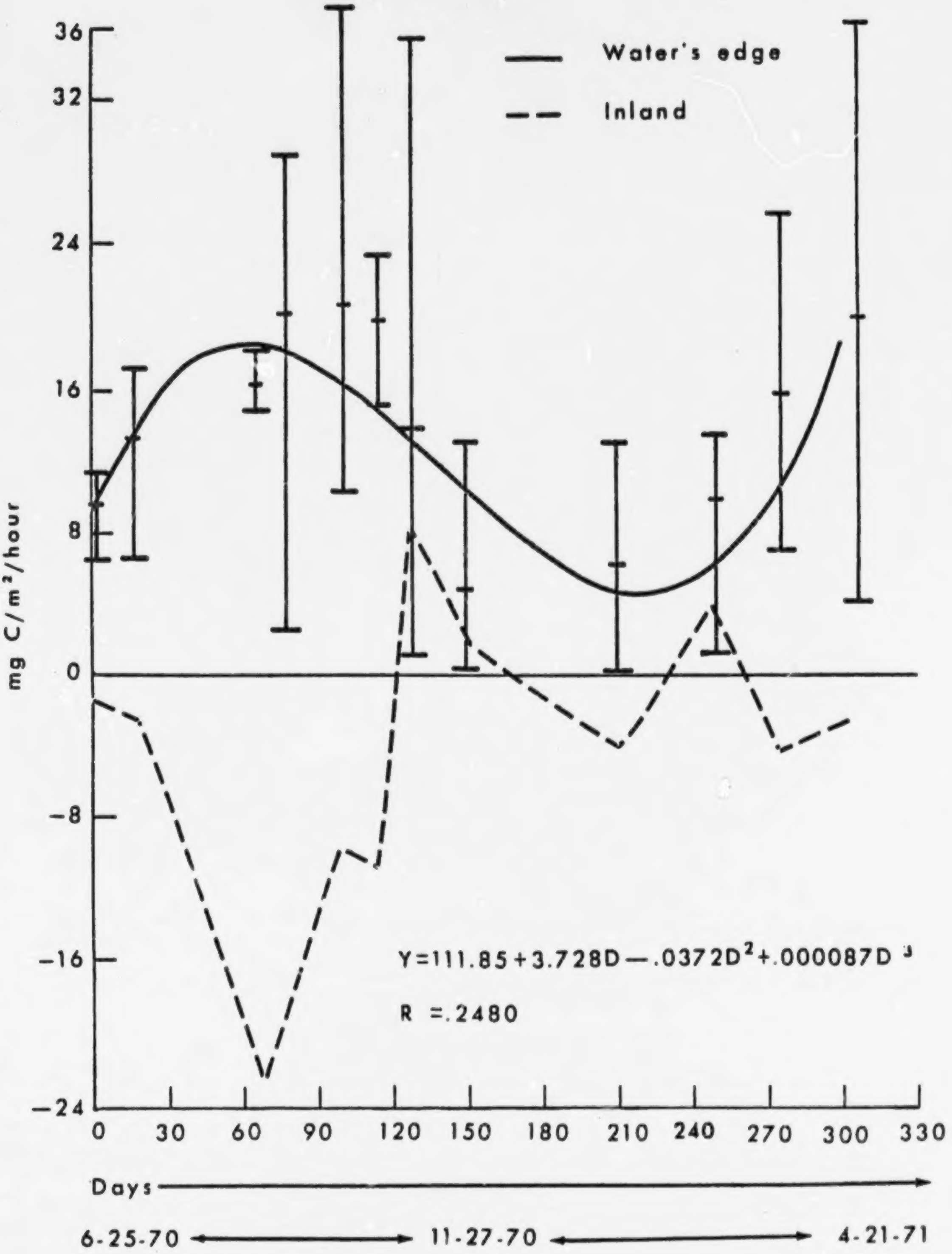
continued

Appendix 6.3(14). Concluded

Species of benthic algae present (Day et al. 1973) - S.E. Louisiana

Enteromorpha flexuosa
Ectocarpus sp.
Gracilaria follifera
Ulvella sp.
Ulothrix sp.
Cladophora repens
Rhizoclonium sp.
Ulva lactuca
Vaucheria
Oscillatoria princeps
Lyngbya sp.
Spirulina sp.
Chroocroccus sp.
Merismopedia sp.
Anacystis sp.
Enteromorpha intestinalis
Bostrychia rivularis
Polysiphonia havanensis
Cladophora gracilis
Oscillatoria sp.
Amphora sp.
Denticula sp.
Diploneis sp.
Diploneis interrupta
Gyrosigma sp.
Navicula directa
Nitzchia sp.
Opephora sp.
Paralia sp.
Amphiprora sp.
Caloneis sp.
Mastogloia sp.
Pleurosigma sp.
Surirella sp.
Cylindrotheca closterium

Appendix 6.3(15). **Net epiphytic production on stems of *Spartina* collected at the water's edge and inland 1.5 m, with the averages and extremes for the net water's edge production and a fitted curve for water's edge production superimposed (Stowe 1972)**



Appendix 6.3(16). Representative benthos collected in Barataria Bay, Louisiana

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INVERTEBRATE MEIOBENTHOS (Day et al. 1973)

Nematodes: *Diplolaimelloides bruciei*

Harpacticord copepods

Amphipods: *Corophium* sp., *Ampilesca* sp.

Polychaetes: *Neanthes* sp.

Oligochaetes

Ostracods

Taraidaceans

Mites

Small snails

Other annelids

Insect larvae

MICROBENTHOS - FORAMINIFERA (Cruz-Orozco 1970 and Warren 1960)

Ammoastuta sp.	(agglutinated form)
Arenoparella sp.	(agglutinated form)
Trochammina sp.	(agglutinated form)
Ammobaculites sp.	(agglutinated form)
Miliammina sp.	(siliceous-type)
Ammotium sp.	(agglutinated form)
Ammonia sp.	(calcareous-type)
Cribroelphidium sp.	
Eponidella sp.	

continued

MACROBENTHOS (Day et al. 1973)

Polychaetes

- *Neanthes succinea*

Gastropods

- *Littorina irrorata* (marsh periwinkle)
- *Neritina reclivata* (smooth periwinkle)
- *Melampus bidentata* (snail)

Pelecypods

- *Modiolus demissus* (ribbed mussel)

Decapods

- *Uca pugnax* (fiddler crab)
- *Sesarma reticulatum* (square-backed crab)
- *Callinectes sapidus* (blue crab)
- *Panopeus herbstii* (mud crab)
- *Rithropanopeus harrissi*
- *Menippe mercenaria*
- *Clibanarius* sp. (hermit crab)

Appendix 6.3(17). Representative vertebrate species of the Salt Marsh Habitat in the Chenier Plain.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
REPTILES			
Alligator mississippiensis American alligator	crayfish, crabs, birds, fiddler crabs, fish, insects, muskrats, turtles, shrimp, grasses, snails (Chabreck 1971)		Endangered - Tex. Threatened - La.
Chrysemys concinna Mobile cooter			
Malaclemys terrapin Diamondback terrapin	crustaceans, mollusks, roots of marsh plants, carrion (Carr 1952)		
Nerodia fasciata clarki Gulf salt marsh snake	fish, fiddler crabs (Wright and Wright 1957)		
BIRDS			
Podiceps nigricollis Eared grebe	insects, shrimp, some water plants, feathers (Bent 1919)	Oct.-May (Lowery 1974a)	
Podilymbus podiceps Pied-billed grebe	mostly animal: aquatic worms and insects, snails, small frogs and fish. plants: seeds and soft parts (Bent 1919)	Oct.-Apr. (Lowery 1974a)	
Pelecanus erythrorhynchus American white pelican	fish (Bent 1922)	Sept.-May (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Ardea herodias Great blue heron	mostly fish; also crustaceans, insects, frogs, lizards, snakes, birds, small mammals (Bent 1926)	Year-round (Lowery 1974a)	
Butorides striatus Green heron	small fish, earthworms, insects, tadpoles, frogs, snakes, small mammals (Bent 1926)	Mar.-Oct. (Lowery 1974a)	
Florida caerulea Little blue heron	crayfish, small crabs, insects, fish, frogs, lizards (Bent 1926)	Mar.-Oct. (Lowery 1974a)	
Bubulcus ibis Cattle egret	insects (Lowery 1974a)	Year-round (Lowery 1974a)	Invaded La. in 1955

continued

Appendix 6.3(17). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Dichromanassa rufescens Reddish egret		Mar.-Oct. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Casmerodius albus Great egret	small fish, snails, fiddlers, insects, frogs, lizards, small snakes, mice, some plant material (Bent 1926)	Mar.-Nov. (Lowery 1974a)	
Egretta thula Snowy egret	shrimp, small fish, fiddlers, snails, insects, crayfish, small lizards, small frogs, small snakes (Bent 1926)	Mar.-Oct. (Lowery 1974a)	
Hydranassa tricolor Louisiana heron	slugs, snails, crayfish, insects, small fish, lizards, frogs (Bent 1926)	Mar.-Nov. (Lowery 1974a)	
Nycticorax nycticorax Black-crowned night heron	mostly fish (alive or dead), worms, crustaceans, insects (Bent 1926)	Mar.-Sept. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Nyctanassa violacea Yellow-crowned night heron	snails, crayfish, crabs, fish, small reptiles, small mammals and birds (Bent 1926)	Mar.-Sept. (Lowery 1974a)	
Botaurus lentiginosus American bittern	mollusks, crayfish, insects, small fish, frogs, lizards, small snakes, mice (Bent 1926)	Oct.-May (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Plegadis falcinellus Glossy ibis	insects, crayfish, young snakes (Bent 1926)	Year-round (Lowery 1974a)	
Plegadis chihi White-faced ibis	earthworms, crayfish, mollusks, crayfish, insects, small fish and frogs, newts, leeches (Bent 1926)	Year-round (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Eudocimus albus White ibis	mostly crayfish; also other crustaceans, slugs, snails, small snakes, insects (Bent 1926)	Mar.-Sept. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Ajaia ajaja Roseate spoonbill	fish, shrimp, insects (Bent 1926)	Year-round (Lowery 1974a)	
Branta canadensis Canada goose	almost wholly plants: aquatic plants, marsh grasses, sedges; some mollusks, crustaceans (Bent 1925)	Oct.-Feb. (Lowery 1974a)	
Anser albifrons White-fronted goose	grain, tender shoots, occasional insects (Bent 1925)	Nov.-Mar. (Lowery 1974a)	

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Appendix 6.3(17). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Chen caerulescens Snow goose	almost wholly plants: grain, roots and culms of grasses; some insects, mollusks (Bent 1923)	Oct.-Apr. (Lowery 1974a)	
Dendrocygna bicolor Fulvous tree duck	mostly seeds of grasses and weeds; also grasses, grain (Bent 1923)	Apr.-Sept. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Anas platyrhynchos Mallard	90% plant; sedges, grasses, smartweeds, pondweeds, duckweeds, tubers, mast; 10% animal: insects, crustaceans, mollusks, fish (Bent 1923)	Oct.-Mar. (Lowery 1974a)	
Anas rubripes Black duck	mast, grain, mollusks, crustaceans (Bent 1923)	Oct.-Mar. (Lowery 1974a)	
Anas fulvigula Mottled duck	40% animal: mollusks, insects, crayfish, small fish 60% plant: mostly grasses (plants and seeds) (Bent 1923)	Year-round (Lowery 1974a)	
Anas strepera Gadwall	principally plants (Bent 1953)	Oct.-May. (Lowery 1974a)	
Anas acuta Northern pintail	13% animal: mollusks, crustaceans, insects 87% plant: pondweed, sedges and grasses (60%); other (27%) (Bent 1923)	Oct.-Mar. (Lowery 1974a)	
Anas crecca Green-winged teal	10% animal: insects, mollusks, crustaceans 90% plant: sedges, pondweeds and grasses (62%); other (28%) (Bent 1923)	Oct.-Mar. (Lowery 1974a)	
Anas discors Blue-winged teal	30% animal: worms, mollusks, insects, tadpoles 70% plant: sedges, pondweeds and grasses (43.6%); other (26.4%) (Bent 1923)	Feb.-Apr.; Sept.-Nov. (Lowery 1974a)	
Anas clypeata Northern shoveler	animal: worms, small mollusks, insects, shrimp, small fish, small frogs. plant: buds and young shoots of rushes and other aquatics; grasses (Bent 1923)	Oct.-Apr. (Lowery 1974a)	
Anas americana American widgeon			
Aythya collaris Ring-necked duck	19% animal: insects, mollusks; 81% plant: aquatic plants, sedges, grasses, smartweeds (Cottam 1939)	Oct.-Apr. (Lowery 1974a)	

continued

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Aythya affinis Lesser scaup	similar to *A. marila* (Bent 1923)	Oct.-Apr. (Lowery 1974a)	
Bucephala albcola Bufflehead	79% animal: insects, crustaceans, mollusks, fish; 21% plant; pondweeds, misc. (Cottam 1939)	Nov.-Mar. (Lowery 1974a)	
Oxyura jamaicensis Ruddy duck	72% plant: aquatic plants, grasses, sedges; 28% animal: insects, mollusks, crustaceans (Cottam 1939)	Nov.-Apr. (Lowery 1974a)	
Circus cyaneus Marsh hawk	small mammals, herons, ducks, coots, rails, shorebirds, songbirds	Sept.-Apr. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Falco peregrinus Peregrine falcon	primarily birds: also mammals, insects (Bent 1937)	Sept.-May (Lowery 1974a)	Endangered
Falco columbarius Merlin	mostly birds: green-winged teal, shorebirds, small chickens, various songbirds; also insects, spiders, reptiles, mice, pocket gophers, squirrels, bats (Bent 1937)	Sept.-May (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Falco sparverius American kestrel	insects, amphibians, reptiles, birds, mammals (Bent 1937)	Sept.-Apr. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Grus americana Whooping crane			Extinct in Chenier Plain Last seen in La. near White Lake in 1949 (Lowery 1974)
Rallus longirostris Clapper rail	small crabs, snails, small fish, aquatic insects, plants (Bent 1926)	Year-round (Lowery 1974a)	
Rallus limicola Virginia rail	earthworms, crayfish, insects, snails, small fish, some grass seeds (Bent 1926)	Oct.-Apr. (Lowery 1974a)	
Porzana carolina Sora	small mollusks, insects, seeds (Bent 1926)	Sept.-May (Lowery 1974a)	
Coturnicops noveboracensis Yellow rail		Oct.-May (Lowery 1974a)	

continued

Appendix 6.3(17). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Laterallus jamaicensis Black rail		Nov.-Apr. (Lowery 1974a)	
Himantopus mexicanus Black-necked stilt	99% animal: mostly insects; also crayfish, snails tiny fish. 1% plant: seeds of aquatic and marsh plants (Bent 1927)	Mar.-Oct. (Lowery 1974a)	
Recurvirostra americana American avocet	65% animal: insects. 35% plant: seeds of aquatic and marsh plants (Bent 1927)	Sept.-May (Lowery 1974a)	
Charadrius semipalmatus Semipalmated plover	worms, small mollusks, crustaceans, insects (Bent 1929)	Mar.-May; Jul.-Nov. (Lowery 1974a)	
Pluvialis squatarola Black-bellied plover	marine worms, small mollusks, crustaceans, insects, some plant material (Bent 1929)	Sept.-May (Lowery 1974a)	
Limosa haemastica Hudsonian godwit	worms, mollusks, various insects, crustaceans, other small marine life	Apr.-Jun. (Lowery 1974a)	
Rumenius phaeopus Whimbrel	earthworms, sandworms, insects, mollusks, small crustaceans, some plant material	Apr.-May (Lowery 1974a)	
Tringa melanoleuca Greater yellowlegs	small fish, occasionally insects (Bent 1927)	Feb.-May; Aug.-Nov. (Lowery 1974a)	
Tringa flavipes Lesser yellowlegs	mostly insects; also small crustaceans, small fish, worms (Bent 1927)	Feb.-May; Aug.-Nov. (Lowery 1974a)	
Tringa solitaria Solitary sandpiper	insects, spiders, worms, small crustaceans, small frogs (Bent 1929)	Mar.-Apr.; Aug.-Oct. (Lowery 1974a)	
Catoptropherus semipalmatus Willet	worms, insects, small crabs, small mollusks, small fish, grasses, tender roots, seeds, rice (Bent 1929)	Year-round (Lowery 1974a)	
Actitis macularia Spotted sandpiper	various insects, some small fish (Bent 1929)	Mar.-Apr. (Lowery 1974a)	
Steganopus tricolor Wilson's phalarope	mosquito larvae, other insects, some seeds of marsh plants (Bent 1927)	Oct.-Apr. (Lowery 1974a)	

continued

Appendix 6.3(17). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Capella gallinago Common snipe	mostly earthworms, also other worms, insects, some seeds of marsh plants (Bent 1927)	Oct.-Apr. (Lowery 1974a)	
Limnodromus griseus Short-billed dowitcher	worms, insects, fish eggs, small mollusks, seeds and roots of aquatic plants (Bent 1927)	Mar.-May; Sept.-Nov. (Lowery 1974a)	
Limnodromus scolopaceus Long-billed dowitcher	insect larvae, some plant material (Bent 1927)	Oct.-May (Lowery 1974a)	
Calidris pusilla Semipalmated sandpiper	small mollusks, worms, insects, traces of plant material (Bent 1927)	Apr.-May; Sept.-Nov. (Lowery 1974a)	
Calidris mauri Western sandpiper	insects, marine worms, small snails (Bent 1927)	Aug.-May (Lowery 1974a)	
Calidris minutilla Least sandpiper	mostly insects; also small crustaceans, worms (Bent 1927)	Aug.-Apr. (Lowery 1974a)	
Calidris bairdii Baird's sandpiper	insects, amphipods, algae (Bent 1927)	Mar.-May; Jul.-Oct. (Lowery 1974a)	
Calidris melanotos Pectoral sandpiper	insects (66%); amphipods (22.3%); algae (10.5%); also other animals, seeds (Bent 1927)	Mar.-May; Aug.-Oct. (Lowery 1974a)	
Calidris alpina Dunlin	small mollusks, small crustaceans, insects, marine worms, occasionally seeds (Bent 1927)	Oct.-May (Lowery 1974a)	
Calidris hemantopus Stilt sandpiper	animal (70%): small worms, mollusks, insects plant (30%): seeds (Bent 1927)	Apr.-May (Lowery 1974a)	
Larus atricilla Laughing gull	mostly small fish; also eggs of other seabirds, refuse (Bent 1921)	Year-round (Lowery 1974a)	
Gelochelidon nilotica Gull-billed tern	insects (LBent 1921)	Oct.-Apr. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Sterna forsteri Forster's tern	insects, floating carrion (Bent 1921)	Year-round (Lowery 1974a)	

continued

Appendix 6.3(17). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Sterna caspia Caspian tern	almost wholly small fish; also shrimp and other surface-swimming aquatic life (Bent 1921)	Year-round (Lowery 1974a)	
Asio flammeus Short-eared owl	mostly small mammals, also small birds, insects (Bent 1937)	Oct.-May (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Chordeiles minor Common nighthawk	insects, mostly flying (Bent 1940)	Apr.-Oct. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Chaetura pelagica Chimney swift	flying insects (Bent 1940)	Mar.-Oct. (Lowery 1974a)	
Megaceryle alcyon Belted kingfisher	almost wholly fish; also insects, crustaceans, mollusks, amphibians, small reptiles, birds, mice, berries (Bent 1940)	Sept.-Apr. (Lowery 1974a)	
Iridoprocne bicolor True swallow	81% animal: insects and spiders 21% plant: seeds and berries (Bent 1942)	Sept.-May (Lowery 1974a)	
Riparia riparia Bank swallow	insects (Bent 1942)	Apr.-May; Jul.-Oct. (Lowery 1974a)	
Hirundo rustica Barn swallow	99% animal: insects; some spiders and snails	Mar.-May; Aug.-Nov. (Lowery 1974a)	
Petrochelidon pyrrhonota Cliff swallow	99% animal: insects (Bent 1942)	Apr.-Jun. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Corvus ossifragus Fish crow	carrion, crustaceans, fish, bird eggs, insects; berries, tree truits, seeds, some grain (Bent 1946)	Year-round (Lowery 1974a)	
Cistothorus palustris Marsh wren	insects; especially Coleoptera and Diptera (Bent 1948)	Year-round (Lowery 1974a)	
Cistothorus platensis Sedge wren	insects, spiders (Bent 1948)	Oct.-Mar. (Lowery 1974a)	
Anthus spinoletta Water pipit		Nov.-Mar. (Lowery 1974a)	

continued

Appendix 6.3(17). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Dendroica palmarum Palm warbler	mostly insects, spiders; also seeds, berries (Bent 1953)	Oct.-Apr. (Lowery 1974a)	
Geothylypis trichas Common yellowthroat	mostly insects, spiders; a few seeds (Bent 1953)	Mar.-Oct. (Lowery 1974a)	
Dolichonyx oryzivorus Bobolink	57% animal: insects, spiders, myriapods; 43% plant: weed seeds, grain (Bent 1958)	May (Lowery 1974a)	
Agelaius phoeniceus Red-winged blackbird	73% plant: weed seeds, grain, fruit; 27% animal: mostly insects and spiders	Year-round (Lowery 1974a)	
Quiscalus mexicanus Great-tailed grackle	worms, insects, crustaceans, small fish, tadpoles, small lizards, eggs and young of birds, fruit, grain (Bent 1958)	Mar.-Aug. (Lowery 1974a)	
Quiscalus major Boat-tailed grackle	insects, spiders, small fish, tadpoles (Bent 1958)	Year-round (Lowery 1974a)	
Passerculus sandwichensis Savannah sparrow	92% plant: seeds; 8% animal: mostly insects (winter) (Bent 1968)	Oct.-Apr. (Lowery 1974a)	
Ammospiza caudacuta Sharp-tailed sparrow	81% animal: insects, amphipods, spiders, small snails; 19% plant: grasses, seeds (Bent, 1968)	Nov.-Mar. (Lowery 1974a)	
Ammospiza maritima Seaside sparrow	marine worms, crustaceans, insects, spiders, mollusks, weed and grass seeds (Bent 1968)	Year-round (Lowery 1974a)	
MAMMALS			
Didelphis virginiana Virginia opossum	insects, birds, carrion, plant material (Lowery 1974b)	Breeds in Jan.-Feb. (Lowery 1974b)	
Dasypus novemcinctus Nine-banded armadillo	insects, plant material (Lowery 1974b)	Breeds inJul.-Aug. (Lowery 1974b)	
Sylvilagus aquaticus Swamp rabbit	green plants (Lowery 1974b)	Breeds Jan.-Sept. (Lowery 1974b)	

continued

Appendix 6.3(17). Concluded.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Oryzomys palustris Marsh rice rat	plant material, insects, crustaceans, bird eggs and young (Lowery 1974b)	Breeds Mar.-Oct. (Lowery 1974b)	
Ondatra zibethicus Common muskrat	grasses, aquatic plants, animals (O'Neil 1949)	Breeding peaks in Nov. and Mar. (Lowery 1974b)	$x=2.4$ houses/100 acre; 1969-1971 (Palmisano 1972)
Myocastor coypus Nutria	aquatic plants (Lowery 1974b)		
Procyon lotor Northern raccoon	animals and plant material (Lowery 1974b)	Breeds Dec.-Jan. (Lowery 1974b)	
Lutra canadensis Nearctic river otter	crabs, crayfish, fish, frogs, turtles, snakes (Lowery 1974b)	Breeds in late fall (Lowery 1974b)	

Appendix 6.3(18). Representative vertebrate species of the Brackish Marsh Habitat in the Chenier Plain.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
AMPHIBIANS			
Bufo woodhousei Woodhouse's toad			
Hyla cinerea Green tree frog			
Rana clamitans Bronze frog			
Rana spenocephala Southern leopard frog			
Gastrophryne carolinensis Eastern narrow-mouthed toad			
REPTILES			
Alligator mississippiensis American alligator	50% blue crabs; also birds, fiddler crabs, fish, insects, muskrats, turtles, shrimp, grasses, snails (Chabreck 1971)		Endangered - Tex. Threatened - La. .07/acre (Joanen and McNease 1972)
Chelydra serpentina Snapping turtle	fish (35.4%); other vertebrates (1.1%); carrion (19.6%); invertebrates (7.8%); vegetable matter (36.2%) (Carr 1952)		
Kinosternon subrubrum Mississippi mud turtle	insects, small snails (Carr 1952)		
Chrysemys floridana Missouri slider			
Delrochelys reticularia Chicken turtle	tadpoles, crayfish, plant material (Carr 1952)		
Malaclemys terrapin Diamondback terrapin	crustaceans, mollusks, roots of marsh plants, carrion (Carr 1952)		
Coluber constrictor Racer	insects, frogs, snakes, young birds (Wright and Wright 1957)	Breeds: May Hatch: Jul.-Sept. (Wright and Wright 1957)	

continued

Appendix 6.3(18). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Lampropeltis getulus Speckled king snake	other snakes, small birds, lizards, mice, rats (Wright and Wright 1957)		
Nerodia cyclopion Green water snake	*Gambusia* (77.6%); other fish (18.6%); tadpoles (3.5%) (Mushinsky and Hebrard 1976)	Mar.-Oct. (Mushinsky and Hebrard, unpublished manuscript)	
Nerodia fasciata clarki Gulf salt marsh snake	fish, fiddler crabs (Wright and Wright 1957)		
Nerodia fasciata confluens Broad-banded water snake	fish (86.9%); frogs and toads (6.4%); tadpoles (4.8%) (Mushinsky and Hebrard 1976)	Mar.-Sept. (Mushinsky and Hebrard, unpublished manuscript)	
Nerodia rhombifera Diamondback water snake	fish (92.7%); frogs and toads (1.0%); tadpoles (6.1%) (Mushinsky and Hebrard 1976)	Mar.-Oct. (Mushinsky and Hebrard, unpublished manuscript)	
Regina rigida Glossy crayfish snake	*Siren*, fish, crayfish (Wright and Wright 1957)		
Storeria dekayi Brown snake	earthworms, snails, insects, small frogs, fish (Wright and Wright 1957)		
Thamnophis proximus Western ribbon snake	insects, fish, frogs, salamanders, mice, toads (Wright and Wright 1957)		
Agkistrodon piscivorus Cottonmouth	fish, salamanders, frogs, reptiles, birds, mammals, (Wright and Wright 1957)		
BIRDS			
Podiceps nigricollis Eared grebe	insects, shrimp, some water plants, feathers (Bent 1919)	Oct.-May (Lowery 1974a)	
Podilymbus podiceps Pied-billed grebe	mostly animal: aquatic worms and insects, snails, small frogs and fish. plants: seeds and soft parts (Bent 1919)	Oct.-Apr. (Lowery 1974a)	

continued

Appendix 6.3(18). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Ardea herodias Great blue heron	mostly fish; also crustaceans, insects, frogs, lizards, snakes, birds, small mammals (Bent 1926)	Year-round (Lowery 1974a)	
Butorides striatus Green heron	small fish, earthworms, insects, tadpoles, frogs, snakes, small mammals (Bent 1926)	Mar.-Oct. (Lowery 1974a)	
Florida caerulea Little blue heron	crayfish, small crabs, insects, fish, frogs, lizards (Bent 1926)	Mar.-Oct. (Lowery 1974a)	
Bubulcus ibis Cattle egret	insects (Lowery 1974a)	Year-round (Lowery 1974a)	Invaded La. in 1955
Dichromanassa rufescens Reddish egret		Mar.-Oct. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Casmerodius albus Great egret	small fish, snails, fiddlers, insects, frogs, lizards, small snakes, mice, some plant material (Bent 1926)	Mar.-Nov. (Lowery 1974a)	
Egretta thula Snowy egret	shrimp, small fish, fiddlers, snails, insects, crayfish small lizards, small frogs, small snakes (Bent 1926)	Mar.-Oct. (Lowery 1974a)	
Hydranassa tricolor Louisiana heron	slugs, snails, crayfish, insects, small fish, lizards, frogs (Bent 1926)	Mar.-Nov. (Lowery 1974a)	
Nycticorax nycticorax Black-crowned night heron	mostly fish (alive or dead), worms, crustaceans, insects (Bent 1926)	Mar.-Sept. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Nyctanassa violacea Yellow-crowned night heron	snails, crayfish, crabs, fish, small reptiles, small mammals and birds (Bent 1926)	Mar.-Sept. (Lowery 1974a)	
Ixobrychus exilis Least bittern	slugs, leeches, insects, small fish, tadpoles, small frogs, lizards, small mammals	Apr.-Sept. (Lowery 1974a)	
Botaurus lentiginosus American bittern	mollusks, crayfish, insects, small fish, frogs, lizards, small snakes, mice (Bent 1926)	Oct.-May (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Mycteria americana Wood stork	fish, aquatic reptiles, insects (Bent 1926)	Jun.-Sept. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)

continued

Appendix 6.3(18). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Plegadis falcinellus Glossy ibis	insects, crayfish, young snakes (Bent 1926)	Year-round (Lowery 1974a)	
Plegadis chihi White-faced ibis	earthworms, crayfish, mollusks, crayfish, insects, small fish and frogs, newts, leeches (Bent 1926)	Year-round (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Eudocimus albus White ibis	mostly crayfish; also other crustaceans, slugs, snails, small snakes, insects (Bent 1926)	Mar.-Sept. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Ajaia ajaja Roseate spoonbill	fish, shrimp, insects (Bent 1926)	Year-round (Lowery 1974a)	
Branta canadensis Canada goose	almost wholly plants: aquatic plants, marsh grasses, sedges; some mollusks, crustaceans (Bent 1925)	Oct.-Feb. (Lowery 1974a)	
Anser albifrons White-fronted goose	grain, tender shoots, occasional insects (Bent 1925)	Nov.-Mar. (Lowery 1974a)	
Chen caerulescens Snow goose	almost wholly plants: grain, roots and culms of grasses; some insects, mollusks (Bent 1923)	Oct.-Apr. (Lowery 1974a)	
Dendrocygna bicolor Fulvous tree duck	mostly seeds of grasses and weeds; also grasses, grain (Bent 1923)	Apr.-Sept. (Lowery 1974a)	
Anas platyrhynchos Mallard	90% plant: sedges, grasses, smartweeds, pondweeds, duckweeds, tubers, mast; 10% animal: insects, crustaceans, mollusks, fish (Bent 1923)	Oct.-Mar. (Lowery 1974a)	
Anas rubripes Black duck	mast, grain, mollusks, crustaceans (Bent 1923)	Oct.-Mar. (Lowery 1974a)	
Anas fulvigula Mottled duck	40% animal: mollusks, insects, crayfish, small fish 60% plant: mostly grasses (Plants and seeds) (Bent 1923)	Year-round (Lowery 1974a)	
Anas strepera Gadwall	principally plants (Bent 1953)	Oct.-Mar. (Lowery 1974a)	
Anas acuta Northern pintail	13% animal: mollusks, crustaceans, insects 87% plant: pondweed, sedges and grasses (60%); other (27%) (Bent 1923)	Oct.-Mar. (Lowery 1974a)	

continued

Appendix 6.3(18). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Anas crecca Green-winged teal	10% animal: insects, mollusks, crustaceans 90% plant: sedges, pondweeds and grasses (62%); other (28%) (Bent 1923)	Oct.-Mar. (Lowery 1974a)	
Anas discors Blue-winged teal	30% animal: worms, mollusks, insects, tadpoles 70% plant: sedges, pondweeds and grasses (43.6%); other (26.4%) (Bent 1923)	Feb.-Apr.; Sept.-Nov. (Lowery 1974a)	
Anas clypeata Northern shoveler	animal: worms, small mollusks, insects, shrimp, small fish, small frogs. plant: buds and young shoots of rushes and other aquatics; grasses (Bent 1923)	Oct.-Apr. (Lowery 1974a)	
Anas americana American widgeon	90% plant, 10% animal (from Sept.-Apr.) (Bent 1923)	Oct.-Apr. (Lowery 1974a)	
Aythya collaris Ring-necked duck	19% animal: insects, mollusks; 81% plant: aquatic plants, sedges, grasses, smartweeds (Cottam 1939)	Oct.-Apr. (Lowery 1974a)	
Aythya affinis Lesser scaup	similar to A. marila (Bent 1923)	Oct.-Apr. (Lowery 1974a)	
Bucephala albeola Bufflehead	79% animal: insects, crustaceans, mollusks, fish; 21% plant: pondweeds, misc. (Cottam 1939)	Nov.-Mar. (Lowery 1974a)	
Oxyura jamaicensis Ruddy duck	72% plant: aquatic plants, grasses, sedges; 28% animal: insects, mollusks, crustaceans (Cottam 1939)	Nov.-Apr. (Lowery 1974a)	
Circus cyaneus Marsh hawk	small mammals, herons, ducks, coots, rails, shorebirds, songbirds	Sept.-Apr. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Falco peregrinus Peregrine falcon	primarily birds; also mammals, insects (Bent 1937)	Sept.-May (Lowery 1974a)	Endangered
Falco columbarius Merlin	mostly birds: green-winged teal, shorebirds, small chickens, various songbirds; also insects, spiders, reptiles, mice, pocket gophers, squirrels, bats (Bent 1937)	Sept.-May (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Rallus elegans King rail	grass seeds, insects, slugs, leeches, tadpoles, crayfish (Bent 1926)	Year-round (Lowery 1974a)	

continued

Appendix 6.3(18) Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Rallus longirostris Clapper rail	small crabs, snails, small fish, aquatic insects, plants (Bent 1926)	Year-round (Lowery 1974a)	
Rallus limicola Virginia rail	earthworms, crayfish, insects, snails, small fish, some grass seeds (Bent 1926)	Oct.-Apr. (Lowery 1974a)	
Porzana carolina Sora	small mollusks, insects, seeds (Bent 1926)	Sept.-May (Lowery 1974a)	
Coturnicops noveboracensis Yellow rail		Oct.-May (Lowery 1974a)	
Laterallus jamaicensis Black rail		Nov.-Apr. (Lowery 1974a)	
Gallinula chloropus Common gallinule	seeds, roots, soft parts of aquatic plants, snails, insects, worms (Bent 1926)	Apr.-Nov. (Lowery 1974a)	
Fulica americana American coot	leaves, fronds, seeds and roots of aquatic plants; wild celery, algae; worms, snails, insects, small fish, tadpoles (Bent 1926)	Sept.-Apr. (Lowery 1974a)	
Himantopus mexicanus Black-necked stilt	99% animal: mostly insects; also crayfish, snails, tiny fish. 1% plant: seeds of aquatic and marsh plants (Bent 1927)	Mar.-Oct. (Lowery 1974a)	
Recurvirostra americana American avocet	65% animal: insects. 35% plant: seeds of aquatic and marsh plants (Bent 1927)	Sept.-May (Lowery 1974a)	
Pluvialis squatarola Black-bellied plover	marine worms, small mollusks, crustaceans, insects, some plant material (Bent 1929)	Sept.-May (Lowery 1974a)	
Limosa haemastica Hudsonian godwit	worms, mollusks, various insects, crustaceans, other small marine life	Apr.-Jun. (Lowery 1974a)	
Numenius phaeopus Whimbrel	earthworms, sandworms, insects, mollusks, small crustaceans, some plant material	Apr.-May (Lowery 1974a)	
Tringa melanoleuca Greater yellowlegs	small fish, occasionally insects (Bent 1927)	Feb.-May; Aug.-Nov. (Lowery 1974a)	

continued

Appendix 6.3(18) Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Tringa flavipes Lesser yellowlegs	mostly insects; also small crustaceans, small fish, worms (Bent 1927)	Feb.-May; Aug.-Nov. (Lowery 1974a)	
Tringa solitaria Solitary sandpiper	insects, spiders, worms, small crustaceans, small frogs (Bent 1929)	Mar.-Apr.; Aug.-Oct. (Lowery 1974a)	
Catoptropherus semipalmatus Willet	worms, insects, small crabs, small mollusks, small fish, grasses, tender roots, seeds, rice (Bent 1929)	Year-round (Lowery 1974a)	
Actitis macularia Spotted sandpiper	various insects, some small fish (Bent 1929)	Mar.-Apr. (Lowery 1974a)	
Steganopus tricolor Wilson's phalarope	mosquito larvae, other insects, some seeds of marsh plants (Bent 1927)	Oct.-Apr. (Lowery 1974a)	
Capella gallinago Common snipe	worms, insects, seeds of marsh plants (Bent 1927)	Oct.-Apr. (Lowery 1974a)	
Limnodromus griseus Short-billed dowitcher	worms, insects, fish eggs, small mollusks, seeds and roots of aquatic plants (Bent 1927)	Mar.-May; Sept.-Nov. (Lowery 1974a)	
Limnodromus scolopaceus Long-billed dowitcher	insect larvae, some plant material (Bent 1927)	Oct.-May (Lowery 1974a)	
Calidris pusilla Semipalmated sandpiper	small mollusks, worms, insects, traces of plant material (Bent 1927)	Apr.-May; Sept.-Nov. (Lowery 1974a)	
Calidris mauri Western sandpiper	insects, marine worms, small snails (Bent 1927)	Aug.-May (Lowery 1974a)	
Calidris minutilla Least sandpiper	mostly insects; also small crustaceans, worms (Bent 1927)	Aug.-Apr. (Lowery 1974a)	
Calidris bairdii Baird's sandpiper	insects, amphipods, algae (Bent 1927)	Mar.-May; Jul.-Oct. (Lowery 1974a)	
Calidris melanotos Pectoral sandpiper	insects (66%); amphipods (22.3%); algae (10.5%); also other animals, seeds (Bent 1927)	Mar.-May; Aug.-Oct. (Lowery 1974a)	

continued

Appemdix 6.3(18) Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Calidris alpina Dunlin	small mollusks, small crustaceans, insects, marine worms, occasionally seeds (Bent 1927)	Oct.-May (Lowery 1974a)	
Calidris hemantopus Stilt sandpiper	animal (70%): small worms, mollusks, insects plant (30%): seeds (Bent 1927)	Apr.-May (Lowery 1974a)	
Larus atricilla Laughing gull	mostly small fish; also eggs of other seabirds, refuse	Year-round (Lowery 1974a)	
Gelochelidon ailotica Gull-billed tern	insects (Bent 1921)	Oct.-Apr. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Sterna forsteri Forster's tern	insects, floating carrion (Bent 1921)	Year-round (Lowery 1974a)	
Sterna caspia Caspian tern	almost wholly small fish; also shrimp and other surface-swimming aquatic life (Bent 1921)	Year-round (Lowery 1974a)	
Asio flammeus Short-eared owl	mostly small mammals, also small birds, insects (Bent 1937)	Oct.-May (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Chordeiles minor Common nighthawk	insects, mostly flying (Bent 1940)	Apr.-Oct. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Chaetura pelagica Chimney swift	flying insects (Bent 1940)	Mar.-Oct. (Lowery 1974a)	
Megaceryle alcyon Belted kingfisher	almost wholly fish; also insects, crustaceans, mollusks, amphibians, small reptiles, birds, mice, berries (Bent 1940)	Sept.-Apr. (Lowery 1974a)	
Iridoprocne bicolor Tree swallow	81% animal: insects and spiders 21% plant: seeds and berries (Bent 1942)	Sept.-May (Lowery 1974a)	
Riparia riparia Bank swallow	insects (Bent 1942)	Apr.-May; Jul.-Oct. (Lowery 1974a)	
Hirundo rustica Barn swallow	99% animal: insects; some spiders and snails (Bent 1942)	Mar.-May; Aug.-Nov. (Lowery 1974a)	

continued

Appendix 6.3(18) Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Petrochelidon pyrrhonota Cliff swallow	99% animal: insects (Bent 1942)	Apr.-Jun. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Corvus ossifragus Fish crow	carrion, crustaceans, fish, bird eggs, insects; berries, tree fruits, seeds, some grain (Bent 1946)	Year-round (Lowery 1974a)	
Cistothorus palustris Marsh wren	insects; especially Coleoptera and Diptera (Bent 1948)	Year-round (Lowery 1974a)	
Cistothorus platensis Sedge wren	insects, spiders (Bent 1948)	Oct.-Mar. (Lowery 1974a)	
Anthus spinoletta Water pipit		Nov.-Mar. (Lowery 1974a)	
Dolichonyx oryzivorus Bobolink	57% animal: insects, spiders, myriapods; 43% plant: weed seeds, grain (Bent 1958)	May (Lowery 1974a)	
Agelaius phoeniceus Red-winged blackbird	73% plant: weed seeds, grain, fruit; 27% animal: mostly insects and spiders	Year-round (Lowery 1974a)	
Quiscalus mexicanus Great-tailed grackle	worms, insects, crustaceans, small fish, tadpoles, small lizards, eggs and young of birds, fruit, grain (Bent 1958)	Mar.-Aug. (Lowery 1974a)	
Quiscalus major Boat-tailed grackle	insects, spiders, small fish, tadpoles (Bent 1958)	Year-round (Lowery 1974a)	
Passerculus sandwichensis Savannah sparrow	92% plant: seeds; 8% animal: mostly insects (winter) (Bent 1968)	Oct.-Apr. (Lowery 1974a)	
MAMMALS			
Didelphis virginiana Virginia opossum	insects, birds, carrion, plant material (Lowery 1974b)	Breeds in Jan.-Feb. (Lowery 1974b)	
Dasypus novemcinctus Nine-banded armadillo	insects, plant material (Lowery 1974b)	Breeds in Jul.-Aug. (Lowery 1974b)	

continued

Appendix 6.3(18) Concluded.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Sylvilagus aquaticus Swamp rabbit	green plants (Lowery 1974b)	Breeds Jan.-Sept. (Lowery 1974b)	
Oryzomys palustris Marsh rice rat	plant material, insects, crustaceans, bird eggs and young (Lowery 1974b)	Breeds Mar.-Oct. (Lowery 1974b)	
Ondatra zibethicus Common muskrat	50% blue crabs; also birds, fiddler crabs, fish, insects, muskrats, turtles, shrimp, grasses, snails (Chabreck 1971)	Breeding peaks in Nov. and Mar.	x=13.1 houses/ 100 acre; 1969-1971 (Palmisano 1972b)
Canis rufus Red wolf	nutria, swamp rabbit, cottontail, marsh rice rat, cotton rat, muskrat, some newborn calves (Riley and McBride 1972)	Active year-round (Lowery 1974b)	Endangered
Procyon lotor Northern raccoon	animals and plant material (Lowery 1974b)	Breeds Dec.-Jan. (Lowery 1974b)	
Mustela vison North American mink	crayfish, rodents, birds, fish, crabs, frogs (Lowery 1974b)	Active year-round births in early spring (Lowery 1974b)	
Lutra canadensis Nearctic river otter	frogs, turtles, snakes, fish, crayfish, crabs (Lowery 1974b)	Mates in late fall (Lowery 1974b)	
Odocoileus virginianus White-tailed deer	plant material (Lowery 1974b)	Breeds: Sept.-Mar. (Lowery 1974b)	

Appendix 6.3(19). Representative vertebrate species of the Intermediate Marsh Habitat in the Chenier Plain.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
AMPHIBIANS			
Eurycea quadridigitata Dwarf salamander			
Bufo woodhousei Woodhouse's toad			
Hyla cinerea Green treefrog			
Rana clamitans Bronze frog			
Rana spenocephala Southern leopard frog			
Gastrophryne carolinensis Eastern narrow-mouthed toad			
REPTILES			
Alligator mississippiensis American alligator	crayfish, crabs, birds, fiddler crabs, fish, insects, muskrats, turtles, shrimp, grasses, snails (Chabreck 1971)		Endangered - Tex. Threatened - La. 0.1/acre (Joanen and McNease 1972)
Chelydra serpentina Snapping turtle	fish (35.4%), other vertebrates (1.1%), carrion (19.6%), invertebrates (7.8%), plant material (36.2%) (Carr 1952)		
Sternotherus odoratus Stinkpot	fish (46.3%), mollusks (40.1%), also crayfish, insects, plant material for Michigan (Carr 1952)		
Kinosternon subrubrum Mississippi mud turtle	insects, small snails (Carr 1952)		
Chrysemys floridana Missouri slider			
Deirochelys reticularia Chicken turtle	tadpoles, crayfish, plant material (Carr 1952)		

continued

Appendix 6.3(19). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Coluber constrictor Racer	insects, frogs, snakes, young birds (Wright and Wright 1957)	Breeds: May Hatch: Jul.-Sept. (Wright and Wright 1957)	
Lampropeltis getulus Speckled king snake	other snakes, small birds, lizards, mice, rats (Wright and Wright 1957)		
Nerodia cyclopion Green water snake	*Cambusia* (77.6%); other fish (18.6%); tadpoles (3.5%) (Mushinsky and Hebrard 1976)	Mar.-Oct. (Mushinsky and Hebrard unpublished manuscript)	
Nerodia fasciata confluens Broad-banded water snake	fish (86.9%); frogs and toads (6.4%); tadpoles (4.8%)	Mar.-Sept. (Mushinsky and Hebrard unpublished manuscript)	
Nerodia rhombifera Diamondback water snake	fish (92.7%); frogs and toads (1.0%); tadpoles (6.1%) (Mushinsky and Hebrard 1976)	Mar.-Oct. (Mushinsky and Hebrard unpublished manuscript)	
Regina grahamii Graham's crayfish snake	crayfish (100%) (Mushinsky and Hebrard 1976)	Mar.-Sept. (Mushinsky and Hebrard unpublished manuscript)	
Regina rigida Glossy crayfish snake	*Siren*, fish, crayfish (Wright and Wright 1957)		
Thamnophis proximus Western ribbon snake	insects, fish, frogs, salamanders, mice, toads (Wright and Wright 1957)		
Thamnophis sirtalis Garter snake	earthworms, mollusks, insects, fish, salamanders, toads, frogs, small mammals, small birds (Wright and Wright 1957)		
Agkistrodon piscivorus Cottonmouth	fish, salamanders, frogs, reptiles, birds, mammals (Wright and Wright 1957)		
BIRDS			
Podiceps nigricollis Eared grebe	insects, shrimp, some water plants, feathers (Bent 1919)	Oct.-May (Lowery 1974a)	
Podilymbus podiceps Pied-billed grebe	mostly animal: aquatic worms and insects, snails, small frogs and fish. plants: seeds and soft parts (Bent 1919)	Oct.-Apr. (Lowery 1974a)	

continued

Appendix 6.3(19). Continued.

Species	Food	Abundance or Activity	Remarks
Ardea herodias Great blue heron	mostly fish; also crustaceans, insects, frogs, lizards, snakes, birds, small mammals (Bent 1926)	Year-round (Lowery 1974a)	
Butorides striatus Green heron	small fish, earthworms, insects, tadpoles, frogs, snakes, small mammals (Bent 1926)	Mar.-Oct. (Lowery 1974a)	
Florida caerulea Little blue heron	crayfish, small crabs, insects, fish, frogs, lizards (Bent 1926)	Mar.-Oct. (Lowery 1974a)	
Bubulcus ibis Cattle egret	insects (Lowery 1974a)	Year-round (Lowery 1974a)	Invaded La. in 1955
Casmerodius albus Great egret	small fish, snails, fiddlers, insects, frogs, lizards, small snakes, mice, some plant material (Bent 1926)	Mar.-Nov. (Lowery 1974a)	
Egretta thula Snowy egret	shrimp, small fish, fiddlers, snails, insects, crayfish, small lizards, small frogs, small snakes (Bent 1926)	Mar.-Oct. (Lowery 1974a)	
Hydranassa tricolor Louisiana heron	slugs, snails, crayfish, insects, small fish, lizards, frogs (Bent 1926)	Mar.-Nov. (Lowery 1974a)	
Nycticorax nycticorax Black-crowned night heron	mostly fish (alive or dead), worms, crustaceans, insects (Bent 1926)	Mar.-Sept. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Nyctanassa violacea Yellow-crowned night heron	snails, crayfish, crabs, fish, small reptiles, small mammals and birds (Bent 1926)	Mar.-Sept. (Lowery 1974a)	
Ixobrychus exilis Least bittern	slugs, leeches, insects, small fish, tadpoles, small frogs, lizards, small mammals	Apr.-Sept. (Lowery 1974a)	
Botaurus lentiginosus American bittern	mollusks, crayfish, insects, small fish, frogs, lizards, small snakes, mice (Bent 1926)	Oct.-May (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Mycteria americana Wood stork	fish, aquatic reptiles, insects (Bent 1926)	Jun.-Sept. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Plegadis falcinellus Glossy ibis	insects, crayfish, young snakes (Bent 1926)	Year-round (Lowery 1974a)	
Plegadis chihi White-faced ibis	earthworms, crayfish, mollusks, crayfish, insects, small fish and frogs, newts, leeches (Bent 1926)	Year-round (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)

continued

Appendix 6.3(19). Continued.

Species	Food	Abundance or Activity	Remarks
Anas discors Blue-winged teal	30% animal: worms, mollusks, insects, tadpoles 70% plant: sedges, pondweeds and grasses (43.6%); other (26.4%) (Bent 1923)	Feb.-Apr.; Sept.-Nov. (lowery 1974a)	
Anas clypeata Northern shoveler	animal: worms, small mollusks, insects, shrimp, small fish, small frogs. plant: buds and young shoots of rushes and other aquatics; grasses (Bent 1923)	Oct.-Apr. (Lowery 1974a)	
Anas americana American widgeon	90% plant, 10% animal (from Sept.-Apr.) (Bent 1923)	Oct.-Apr. (Lowery 1974a)	
Aythya collaris Ring-necked duck	19% animal: insects, mollusks; 81% plant: aquatic plants, sedges, grasses, smartweeds (Cottam 1939)	Oct.-Apr. (Lowery 1974a)	
Aythya affinis Lesser scaup	similar to *A. marila* (Bent 1923)	Oct.-Apr. (Lowery 1974a)	
Bucephala albeola Bufflehead	79% animal: insects, crustaceans, mollusks, fish; 21% plant: pondweeds, misc. (Cottam 1939)	Nov.-Mar. (Lowery 1974a)	
Oxyura jamaicensis Ruddy duck	72% plant: aquatic plants, grasses, sedges; 28% animal: insects, mollusks, crustaceans (Cottam 1939)	Nov.-Apr. (Lowery 1974a)	
Lophodytes cucullatus Hooded merganser	mostly insects; also small fish, frogs, mollusks, crayfish, roots of aquatic plants, seeds, grain (Bent 1923)	Nov.-Apr. (Lowery 1974a)	
Circus cyaneus Marsh hawk	small mammals, herons, ducks, coots, rails, shorebirds, songbirds	Sept.-Apr. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Falco peregrines Peregrine falcon	primarily birds; also mammals, insects (Bent 1937)	Sept.-May (Lowery 1974a)	Endangered
Falco columbarius Merlin	mostly birds: green-winged teal, shorebirds, small chickens, various songbirds, also insects, spiders, reptiles, mice, pocket gophers, squirrels, bats (Bent 1937)	Sept.-May (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Falco sparverius American kestrel	insects, amphibians, reptiles, birds, mammals (Bent 1937)	Sept.-Apr. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)

continued

Appendix 6.3(19). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Eudocimus albus White ibis	mostly crayfish, also other crustaceans, slugs, snails, small snakes, insects (Bent 1926)	Mar.-Sept. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Ajaia ajaja Roseate spoonbill	fish, shrimp, insects (Bent 1926)	Year-round (Lowery 1974a)	
Branta canadensis Canada goose	almost wholly plants: aquatic plants, marsh grasses, sedges; some mollusks, crustaceans (Bent 1925)	Oct.-Feb. (Lowery 1974a)	
Anser albifrons White-fronted goose	grain, tender shoots, occasional insects (Bent 1925)	Nov.-Mar. (Lowery 1974a)	
Chen caerulescens Snow goose	almost wholly plants: grain, roots and culms of grasses; some insects, mollusks (Bent 1923)	Oct.-Apr. (Lowery 1974a)	
Dendrocygna bicolor Fulvous whistling-duck	mostly seeds of grasses and weeds; also grasses, grain (Bent 1923)	Apr.-Sept. (Lowery 1974a)	
Anas platyrhynchos Mallard	90% plant: sedges, grasses, smartweeds, pondweeds, duckweeds, tubers, mast; 10% animal: insects, crustaceans, mollusks, fish (Bent 1923)	Oct.-Mar. (Lowery 1974a)	
Anas rubripes Black duck	mast, grain, mollusks, crustaceans (Bent 1923)	Oct.-Mar. (Lowery 1974a)	
Anas fulvigula Mottled duck	40% animal: mollusks, insects, crayfish, small fish 60% plant: mostly grasses (plants and seeds) (Bent 1923)	Year-round (Lowery 1974a)	
Anas strepera Gadwall	principally plants (Bent 1953)	Oct.-Mar. (Lowery 1974a)	
Anas acuta Northern pintail	13% animal: mollusks, crustaceans, insects; 87% plant: pondweed, sedges and grasses (60%); other (27%) (Bent 1923)	Oct.-Mar. (Lowery 1974a)	
Anas crecca Green-winged teal	10% animal: insects, mollusks, crustaceans; 90% plant: sedges, pondweeds and grasses (62%); other (28%) (Bent 1923)	Oct.-Mar. (Lowery 1974a)	

continued

Appendix 6.3(19). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Railus elegans King rail	grass seeds, insects, slugs, leeches, tadpoles, crayfish (Bent 1926)	Year-round (Lowery 1974a)	
Rallus limicola Virginia rail	earthworms, crayfish, insects, snails, small fish, some grass seeds (Bent 1926)	Oct.-Apr. (Lowery 1974a)	
Porzana carolina Sora	small mollusks, insects, seeds (Bent 1926)	Sept.-May (Lowery 1974a)	
Coturnicops noveboracensis Yellow rail		Oct.-May (Lowery 1974a)	
Laterallus jamaicensis Black rail		Nov.-Apr. (Lowery 1974a)	
Gallinula chloropus Common gallinule	seeds, roots, soft parts of aquatic plants, snails, insects, worms (Bent 1926)	Apr.-Nov. (Lowery 1974a)	
Fulica americana American coot	leaves, fronds, seeds and roots of aquatic plants; wild celery, algae; worms, snails, insects, small fish, tadpoles (Bent 1926)	Sept._Apr. (Lowery 1974a)	
Recurvirostra americana American avocet	65% animal: insects. 35% plant: seeds of aquatic and marsh plants (Bent 1927)	Sept.-May (Lowery 1974a)	
Pluvialis squatarola Black-bellied plover	marine worms, small mollusks, crustaceans, insects, some plant material (Bent 1929)	Sept.-May (Lowery 1974a)	
Limosa haemastica Hudsonian godwit	worms, mollusks, various insects, crustaceans, other small marine life.	Apr.-Jun. (Lowery 1974a)	
Numenius phacopus Whimbrel	earthworms, sandworms, insects, mollusks, small crustaceans, some plant material	Apr.-May (Lowery 1974a)	
Tringa melanoleuca Greater yellowlegs	small fish, occasionally insects (Bent 1927)	Feb.-May; Aug.-Nov. (Lowery 1974a)	
Tringa flavipes Lesser yellowlegs	mostly insects; also small crustaceans, small fish, worms (Bent 1927)	Feb.-May; Aug.-Nov. (Lowery 1974a)	
Tringa solitaria Solitary sandpiper	insects, spiders, worms, small crustaceans, small ,frogs (Bent 1929)	Mar.-Apr.; Aug.-Oct. (Lowery 1974a)	

continued

Appendix 6.3(19). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Catoptropherus semipalmatus Willet	worms, insects, small crabs, small mollusks, small fish, grasses, tender roots, seeds, rice (Bent 1929)	Year-round (Lowery 1974a)	
Actitis macularia Spotted sandpiper	various insects, some small fish (Bent 1929)	Mar.-Apr. (Lowery 1974a)	
Steganopus tricolor Wilson's phalarope	mosquito larvae, other insects, some seeds of marsh plants (Bent 1927)	Oct.-Apr. (Lowery 1974a)	
Capella gallinago Common snipe	worms, insects, seeds of marsh plants (Bent 1927)	Oct.-Apr. (Lowery 1974a)	
Limnodromus griseus Short-billed dowitcher	worms, insects, fish eggs, small mollusks, seeds and roots of aquatic plants (Bent 1927)	Mar.-May; Sept.-Nov. (Lowery 1974a)	
Limnodromus scolopaceus Long-billed dowitcher	insect larvae, some plant material (Bent 1927)	Oct.-May (Lowery 1974a)	
Calidris pusilla Semipalmated sandpiper	small mollusks, worms, insects, traces of plant material (Bent 1927)	Apr.-May; Sept.-Nov. (Lowery 1974a)	
Calidris mauri Western sandpiper	insects, marine worms, small snails (Bent 1927)	Aug.-May (Lowery 1974a)	
Calidris minutilla Least sandpiper	mostly insects; also small crustaceans, worms (Bent 1927)	Aug.-Apr. (Lowery 1974a)	
Calidris bairdii Baird's sandpiper	insects, amphipods, algae (Bent 1927)	Mar.-May; July-Oct. (Lowery 1974a)	
Calidris melanotos Pectoral sandpiper	insects (66%); amphipods (22.3%); algae (10.5%); also other animals, seeds (Bent 1927)	Mar.-May; Aug.-Oct. (Lowery 1974a)	
Calidris alpina Dunlin	small mollusks, small crustaceans, insects, marine worms, occasionally seeds (Bent 1927)	Oct.-May (Lowery 1974a)	
Calidris hemantopus Stilt sandpiper	animal (70%): small worms, mollusks, insects plant (30%): seeds (Bent 1927)	Apr.-May (Lowery 1974a)	

continued

Appendix 6.3(19). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Larus atricilla Laughing gull	mostly small fish; also eggs of other seabirds, refuse (Bent 1921)	Year-round (Lowery 1974a)	
Gelochelidon nilotica Gull-billed tern	insects (Bent 1921)	Oct.-Apr. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Sterna forsteri Forster's tern	insects, floating carrion (Bent 1921)	Year-round (Lowery 1974a)	
Sterna caspia Caspian tern	almost wholly small fish; also shrimp and other surface-swimming aquatic life (Bent 1921)	Year-round (Lowery 1974a)	
Chlidonias niger Black tern	small fish, insects (Bent 1921)	Apr.-Sept. (Lowery 1974a) (non-breeding)	
Asio flammeus Short-eared owl	mostly small mammals, also small birds, insects (Bent 1937)	Oct.-May (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Chordeiles minor Common nighthawk	insects, mostly flying (Bent 1940)	Apr.-Oct. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Chaetura pelagica Chimney swift	flying insects (Bent 1940)	Mar.-Oct. (Lowery 1974a)	
Megaceryle alcyon Belted kingfisher	almost wholly fish; also insects, crustaceans, mollusks, amphibians, small reptiles, birds, mice, berries (Bent 1940)	Sept.-Apr. (Lowery 1974a)	
Iridoprocne bicolor Tree swallow	81% animal: insects and spiders 21% plant: seeds and berries (Bent 1942)	Sept.-May (Lowery 1974a)	
Riparia riparia Bank swallow	insects (Bent 1942)	Apr.-May; Jul.-Oct. (Lowery 1974a)	
Hirundo rustica Barn swallow	99% animal: insects, some spiders and snails (Bent 1942)	Mar.-May; Aug.-Nov. (Lowery 1974a)	
Petrochelidon pyrrhonota Cliff swallow		Apr.-Jun. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Corvus ossifragus Fish crow	carrion, crustaceans, fish, bird eggs, insects; berries, tree fruits, seeds, some grain (Bent 1946)	Year-round (Lowery 1974a)	

continued

Appendix 6.3(19). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Cistothorus platensis Sedge wren	insects, spiders (Bent 1948)	Oct.-Mar. (Lowery 1974a)	
Anthus spinoletta Water pipit		Nov.-Mar. (Lowery 1974a)	
Geothlypis trichas Common yellowthroat	mostly insects, a few seeds (Bent 1953)	Mar.-Oct. (Lowery 1974a)	
Delichonyx oryzivorus Bobolink	57% animal: insects, spiders, myriapods; 43% plant: weed seeds, grain (Bent 1958)	May (Lowery 1974a)	
Agelaius phoeniceus Red-winged blackbird	73% plant: weed seeds, grain, fruit; 27% animal: mostly insects and spiders	Year-round (Lowery 1974a)	
Quiscalus major Boat-tailed grackle	insects, spiders, small fish, tadpoles (Bent 1958)	Year-round (Lowery 1974a)	
Passerculus sandwichensis Savannah sparrow	92% plant: seeds; 8% animal: insects (winter) (Bent 1968)	Oct.-Apr. (Lowery 1974a)	
Melospiza georgiana Swamp sparrow	55% insects; 45% weed seeds (Bent 1968)	Sept.-May (Lowery 1974a)	
MAMMALS			
Didelphis virginiana Virginia opossum	insects, birds, carrion, plant material (Lowery 1974b)	Breeds in Jan.-Feb. (Lowery 1974b)	
Dasypus novemcinctus Nine-banded armadillo	insects, plant material (Lowery 1974b)	Breeds in Jul.-Aug. (Lowery 1974b)	
Sylvilagus aquaticus Swamp rabbit	green plants (Lowery 1974b)	Breeds Jan.-Sept. (Lowery 1974b)	
Oryzomys palustris Marsh rice rat	plant material, insects, crustaceans, bird eggs and young (Lowery 1974b)	Breeds Mar.-Oct. (Lowery 1974b)	

continued

Appendix 6.3(19). **Concluded.**

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Ondatra zibethicus Common muskrat	crayfish, crabs, birds, fiddler crabs, fish, insects, muskrats, turtles, shrimp, grasses, snails (Chabreck 1971)	Breeding peaks in Nov. and Mar. (Lowery 1974b)	x=4.5 houses/ 100 acre;1969-1971 (Palmisano 1972b)
Myocastor coypus Nutria	aquatic plants (Lowery 1974b)		
Canis rufus Red wolf	nutria, swamp rabbit, cottontail, marsh rice rat, cotton rat, muskrat, some newborn calves (Riley and McBride 1972)	Active year-round (Lowery 1974b)	Endangered
Procyon lotor Northern raccoon	animals and plant material (Lowery 1974b)	Breeds Dec.-Jan. (Lowery 1974b)	
Mustela vison North American mink	crayfish, rodents, birds, fish, crabs, frogs (Lowery 1974b)	Active year-round births in early spring (Lowery 1974b)	
Lutra canadensis Nearctic river otter	frogs, turtles, snakes, fish, crayfish, crabs	Mates in late fall (Lowery 1974b)	
Odocoileus virginianus White-tailed deer	plant material (Lowery 1974b)	Breeds: Sept.-Mar. (Lowery 1974b)	

Appendix 6.3(20). Checklist of aquatic organisms collected in an Intermediate Marsh Habitat in Cameron Parish, Louisiana, 14 May 1974 to 26 October 1975 (Farlow 1976).

- **PHYLUM MOLLUSCA - mollusks**
  - Class Gastropoda - univalve mollusks
    - Order Basommatophora - fresh-water snails
      - Family Physidae - physid snails
        - *Physa* sp. (adults and young)

- **PHYLUM ARTHROPODA - jointed footed animals**
  - Class Arachnida - arachnids
    - Order Acari - mites and ticks
      - unidentified freshwater mites
  - Class Crustacea - crustaceans
    - Subclass Brachiopoda - Phyllopods
      - Order Cladocera - water fleas
        - unidentified cladoceran
    - Subclass Copepoda - copepods
      - unidentified copepods
    - Subclass Malacostraca
      - Order Amphipoda - sand hoppers
        - Family Talitridae - scuds
          - *Hyalella azteca* (Saussure)(adults and young)
      - Order Decapoda - shrimp and crayfish
        - Family Astacidae - crawfish
          - *Cambarellus* sp. (adults and young)
          - *Procambarus clarki* (Girard) (adults and young)
        - Family Palaemonidae - freshwater prawns
          - *Palaemonetes paludosus* (Gibbs) (adults and young)
      - Order Isopoda - aquatic sowbugs
        - Family Asillidae
          - *Asellus* sp. (adults)
        - Family Bopyridae
          - *Probopyrus* sp. (adults)
      - Order Mysidacea - opossum shrimp
        - Family Mysidae
          - *Taphromysis louisianae* (Banner) (adults and young)
    - Subclass Ostracoda - seed shrimp
      - Order Podocopa
        - unidentified podocopa

continued

Appendix 6.3(20). Continued

Class Insecta - insects
  Order Collembola - spring tails
    Family Isotomidae
      Isotomurus palustris (Muller)
  Order Ephemeroptera - may flies
    Family Baetidae
      Callibaetis sp. (nymphs)
    Family Caenidae
      Caenis sp. (nymphs)
  Order Odonata - dragon and damselflies
    Family Aeschnidae - darters
      Anax sp. (nymphs)
    Family Libellulidae - common skimmers
      Belonia sp. (nymphs)
      Libellula sp. (nymphs)
      Pachydiplax sp. (nymphs)
    Family Coenagrionidae - damselflies
      Enallagma sp. (nymphs)
      Ischnura sp. (nymphs)
  Order Hemiptera
    Family Corixidae - water boatman
      Trichocorixa louisianae Jaczewski (adults and nymphs)
    Family Notonectidae - backswimmers
      Buenoa omani Truxal (adults)
      Buenoa scimitra Bare (adults)
      Buenoa spp. (nymphs)
      Notonecta undulata Say (adults)
      Notonecta sp. (nymphs)
    Family Naucoridae - creeping water bugs
      Pelocoris femoratus (Palisot de Beauvois) (adults and nymphs)
    Family Belostomidae - giant water bugs
      Belostoma lutarium (Stal) (adults)
      Belostoma testaceum (Leidy) (adults)
      Belostoma spp. (nymphs)
    Family Nepidae - water scorpions
      Ranatra australis Hungerford (adults and nymphs)
    Family Veliidae - ripple bugs
      Microvelia pulchella Westwood (adults)

continued

Appendix 6.3(20). Continued

- Family Mesoveliidae - water treaders
  - *Mesovelia mulsanti bisignata* Jaczewski (adults and nymphs)
- Family Hebridae - velvet water bugs
  - *Hebrus consolidus* Uhler (adults)
- Family Saldidae - shore bugs
  - *Micracanthia husseyi* Drake and Chapman (adults)

Order Coleoptera - beetles

- Family Dytiscidae - predaceous diving beetles
  - *Acilius* sp. (larvae)
  - *Liodessus affinis* (Say) (adults)
  - *Uvaris lacustris* (Say) (adults)
  - *Neobidessus pullus* (LeConte) (adults)
  - Bidessine (larvae)
  - *Celina angustata* Aube (adults)
  - *Copelatus caelatipennis* Aube (adults)
  - *Cybister fimbriolatus* (Say) (adults)
  - *Cybister* sp. (larvae)
  - *Hygrotus acaroides* (LeConte) (adults)
  - *Hygrotus nubilus* (LeConte) (adults)
  - *Hygrotus* sp. (larvae)
  - *Hydroporous* sp. (adults and larvae)
  - *Hydrovatus cuspidatus* Kunze (adults)
  - *Hydrovatus* sp. (larvae)
  - *Laccophilus proximus* Say (adults)
  - *Laccophilus* sp. (larvae)
  - *Thermonectus basillaris* Harris (adults)
  - *Thermonectus ornaticollus* Aube (adults)
  - *Thermonectus* spp. (larvae)
- Family Noteridae - burrowing water beetles
  - *Colpius inflatus* LeConte (adults)
  - *Hydrocanthus* sp. (adults)
  - *Pronoterus semipunctatus* (LeConte) (adults)
  - *Suphisellus* sp. (adults)
  - Noterid larvae
- Family Hydrophilidae - water scavenger beetles
  - *Anacaena* sp. (larvae)
  - *Berosus exiguus* (Say) (adults)
  - *Berosus infuscatus* LeConte (adults)

continued

Appendix 6.3(20). Continued

- Family Hydrophilidae - Continued
  - *Berosus* spp. (larvae)
  - *Cercyon* spp. #1 & #2 (adults and larvae)
  - *Enochrus blatchleyi* (Fall) (adults)
  - *Enochrus hamiltoni* (Ham) (adults)
  - *Enochrus ochroceus* (Melsheimer) (adults)
  - *Enochrus* spp. (larvae)
  - *Helophorous* sp. (adults)
  - *Hydrochus* sp. (adults)
  - *Tropisternus blatchleyi* D'Orchymont
  - *Tropisternus collaris striolatus* (LeConte)
  - *Tropisternus lateralis* (Fabricius)
  - *Tropisternus* spp. (larvae)
- Family Hydraenidae - moss beetles
  - *Ochthebius* sp. (adults)
- Family Curculionidae - weevils
  - *Lixellus* sp. #1 (adults) - small
  - *Lixellus schwarzi* LeConte (adults)
  - *Lissorhoptrus* spp. (adults and larvae)
  - *Onychylis nigrirostris* (Boheman) (adults)
  - Curculionid larvae

Order Diptera - flies

- Family Tipulidae - crane flies (larvae)
- Family Pshchodidae - mothflies
  - *Psychoda* sp. (larvae)
- Family Culcidae - mosquitoes
  - *Anopheles* sp. (larvae)
  - *Culex salinarius* Coquillett (larvae)
- Family Heleidae - biting midges (larvae)
- Family Chironomidae - midges (larvae)
- Family Stratiomyidae - soldier flies
  - *Eulalia* sp. (larvae)
- Family Tabanidae - horse and deer flies (larvae)
- Family Dolichopodidae - long-legged flies (larvae)
- Family Syrphidae - flower flies (larvae)
- Family Ephydridae - dance flies
  - *Brachydeutera* sp. (larvae)
  - *Notophila* sp. (larvae)
  - *Parydra* sp. (larvae)
- Family Muscidae - muscid flies (larvae)

continued

Appendix 6.3(20). Concluded

PHYLUM CHORDATA
- Class Osteichthyes - bony fishes
  - Order Semionotiformes - gars and pikes
    - Family Lepisosteidae - gars
      - *Lepisosteus oculatus* (Winchell) (fry)
  - Order Cypriniformes - minnows
    - Family Atherinidae - silver sides
      - *Menidia audens* Hay - mississippi silverside (fry)
    - Family Cyprinidae - minnows
      - *Cyprinus carpio* Linnaeus - carp (fry)
    - Family Cyprinodontidae - killifish
      - *Cyprinodon variegatus* Lacepede - sheephead minnow (fry)
      - *Jordanella floridae* Goode and Bean-flagfish
    - Family Poeciliidae - topminnows
      - *Gambusia affinis* (Baird and Girard) - mosquitofish (adults and fry)
      - *Heterandria formosa* Agassiz - least killifish (adults and fry)
- Class Amphibia - amphibians
  - Order Diplasiocela - frogs and toads
    - Family Ranidae - true frogs
      - *Rana* sp. (tadpoles)

Appendix 6.3(21). Representative vertebrate species of the Fresh Marsh Habitat in the Chenier Plain.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
AMPHIBIANS			
Ambystoma opacum Marbled salamander			
Ambystoma texanum Small-mouthed salamander			
Notophthalmus viridescens Central newt			
Amphiuma tridactylum Three-toed amphiuma			
Siren intermedia Lesser siren			
Eurycea quadridigitata Dwarf salamander			
Bufo valliceps Gulf coast toad			
Bufo woodhousei Woodhouse's toad			
Acris crepitans Northern cricket frog			
Hyla cinerea Green tree frog	Insects (Wright and Wright 1949)		
Hyla crucifer Spring peeper			
Hyla squirella Squirrel tree frog			

continued

Appendix 6.3(21). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Pseudacris triseriata Upland chorus frog			
Rana catesbeiana Bull frog			
Rana clamitans Bronze frog			
Rana grylio Pig frog			
Rana utricularia Southern leopard frog			
Gastrophryne carolinensis Eastern narrow-mouthed toad			
REPTILES			
Alligator mississippiensis American alligator	61% crayfish; also birds, fiddler crabs, fish, insects, muskrats, turtles, shrimp, grasses, snails (Chabreck 1971)		Endangered - Tex. Threatened - La. .09/acre (Joanen and McNease 1972)
Chelydra serpentina Snapping turtle	fish (35.4%), other vertebrates (1.1%), carrion (19.6%), invertebrates (7.8%), plant material (36.2%) (Carr 1952)		
Macroclemys temmincki Alligator snapping turtle	fish, frogs, snakes, other turtles, mussels, various aquatic grasses (Carr 1952)		
Kinosternon subrubrum Mississippi mud turtle	insects, small snails (Carr 1952)		
Sternotherus odoratus Stinkpot	fish (46.3%), mollusks (40.1%), also crayfish, insects, plant material for Michigan (Carr 1952)		

continued

Appendix 6.3(21). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Chrysemys floridana Missouri slider			
Chrysemys picta Southern painted turtle	juvenile: 13% plant, 85% animal adult: 88% plant, 10% animal (Carr 1952)		
Chrysemys scripta Red-eared turtle	juvenile: 30% plant, 70% animal (e.g., amphipods) adult: 89% plant, 11% animal (e.g., crayfish) (Carr 1952)		
Delrochelys reticularia Chicken turtle	tadpoles, crayfish, plant material (Carr 1952)		
Graptemys kohni Mississippi map turtle			
Graptemys pseudogeographica Sabine map turtle			
Trionyx spiniferus Spiny softshell	carnivorous		
Coluber constrictor Racer	insects, frogs, snakes, young birds (Wright and Wright 1957)	Breeds: May Hatch: Jul.-Sept. (Wright and Wright 1957)	
Farancia abacura Mud snake	*Amphiuma*, *Siren*, frogs (Wright and Wright 1957)		
Lampropeltis getulus Speckled king snake	other snakes, small birds, lizards, mice, rats (Wright and Wright 1957)		
Nerodia cyclopion Green water snake	Gambusia (77.6%); other fish (18.6%); tadpoles (3.5%) (Mushinsky and Hebrard 1976)	Mar.-Oct. (Mushinsky and Hebrard unpublished manuscript)	
Nerodia fasciata confluens Broad-banded water snake	fish (86.9%); frogs and toads (6.4%); tadpoles (4.3%) (Mushinsky and Hebrard 1976)	Mar.-Sept. (Mushinsky and Hebrard unpublished manuscript)	
Nerodia rhombifera Diamondback water snake	fish (92.7%); frogs and toads (1.0%); tadpoles (6.1%) (Mushinsky and Hebrard 1976	Mar.-Oct. (Mushinsky and Hebrard unpublished manuscript)	

continued

Appendix 6.3(21). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Regina grahamii Graham's crayfish snake	crayfish (100%) (Mushinsky and Hebrard 1976)	Mar.-Sept. (Mushinsky and Hebrard unpublished manuscript)	
Regina rigida Glossy crayfish snake	*Siren*, fish, crayfish (Wright and Wright 1957)		
Storeria dekayi Brown snake	earthworms, snails, insects, small frogs, fish (Wright and Wright 1957)		
Thamnophis proximus Western ribbon snake	insects, fish, frogs, salamanders, mice, toads (Wright and Wright 1957)		
Thamnophis sirtalis Garter snake	earthworms, mollusks, insects, fish, salamanders, toads, frogs, small mammals, small birds (Wright and Wright 1957)		
Agkistrodon piscivorus Cottonmouth	fish, salamanders, frogs, reptiles, birds, mammals (Wright and Wright 1957)		
BIRDS			
Podiceps nigricollis Eared grebe	insects, shrimp, some water plants, feathers (Bent 1919)	Oct.-May (Lowery 1974a)	
Podilymbus podiceps Pied-billed grebe	mostly animal: aquatic worms and insects, snails, small frogs and fish. plants: seeds and soft parts (Bent 1919)	Oct.-Apr. (Lowery 1974a)	
Ardea herodias Great blue heron	mostly fish; also crustaceans, insects, frogs, lizards, snakes, birds, small mammals (Bent 1926)	Year-round (Lowery 1974a)	
Butorides striatus Green heron	small fish, earthworms, insects, tadpoles, frogs, snakes, small mammals (Bent 1926)	Mar.-Oct. (Lowery 1974a)	
Florida caerulea Little blue heron	crayfish, small crabs, insects, fish, frogs, lizards (Bent 1926)	Mar.-Oct. (Lowery 1974a)	
Bubulcus ibis Cattle egret	insects (Lowery 1974a)	Year-round (Lowery 1974a)	

continued

Appendix 6.3(21). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Casmerodius albus Great egret	small fish, snails, fiddlers, insects, frogs, lizards, small snakes, mice, some plant material (Bent 1926)	Mar.-Nov. (Lowery 1974a)	
Egretta thula Snowy egret	shrimp, small fish, fiddlers, snails, insects, crayfish, small lizards, small frogs, small snakes (Bent 1926)	Mar.-Oct. (Lowery 1974a)	
Hydranassa tricolor Louisiana heron	slugs, snails, crayfish, insects, small fish, lizards, frogs (Bent 1926)	Mar.-Nov. (Lowery 1974a)	
Nycticorax nycticorax Black-crowned night heron	mostly fish (alive or dead), worms, crustaceans, insects (Bent 1926)	Mar.-Sept. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Nyctanassa violacea Yellow-crowned night heron	snails, crayfish, crabs, fish, small reptiles, small mammals and birds (Bent 1926)	Mar.-Sept. (Lowery 1974a)	
Ixobrychus exilis Least bittern	slugs, leeches, insects, small fish, tadpoles, small frogs, lizards, small mammals	Apr.-Sept. (Lowery 1984a)	
Botaurus lentiginosus American bittern	mollusks, crayfish, insects, small fish, frogs, lizards, small snakes, mice (Bent 1926)	Oct.-May (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Mycteria americana Wood stork	fish, aquatic reptiles, insects (Bent 1926)	Jun.-Sept. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Plegadis falcinellus Glossy ibis	insects, crayfish, young snakes (Bent 1926)		
Plegadis chihi White-faced ibis	earthworms, crayfish, mollusks, crayfish, insects, small fish and frogs, newts, leeches (Bent 1926)	Year-round (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Endocimus albus White ibis	mostly crayfish; also other crustaceans, slugs, snails, small snakes, insects (Bent 1926)	Mar.-Sept. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Ajaia ajaja Roseate spoonbill	fish, shrimp, insects (Bent 1926)	Year-round (Lowery 1974a)	
Branta canadensis Canada goose	almost wholly plants: aquatic plants, marsh grasses, sedges; some mollusks, crustaceans (Bent 1925)	Oct.-Feb. (Lowery 1974a)	Introduced at Rockefeller Refuge

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Appendix 6.3(21). continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Anser albifrons White-fronted goose	grain, tender shoots, occasional insects (Bent 1925)	Nov.-Mar. (Lowery 1974a)	
Chen caerulescens Snow goose	almost wholly plants: grain, roots and culms of grasses; some insects, mollusks (Bent 1923)	Oct.-Apr. (Lowery 1974a)	
Dendrocygna bicolor Fulvous tree duck	mostly seeds of grasses and weeds; also grasses, grain (Bent 1923)	Apr.-Sept. (Lowery 1974a)	
Anas platyrhynchos Mallard	90% plant: sedges, grasses, smartweeds, pondweeds, duckweeds, tubers, mast; 10% animal: insects, crustaceans, mollusks, fish (Bent 1923)	Oct.-Mar. (Lowery 1974a)	
Anas rubripes Black duck	mast, grain, mollusks, crustaceans (Bent 1923)	Oct.-Mar. (Lowery 1974a)	
Anas fulvigula Mottled duck	40% animal: mollusks, insects, crayfish, small fish 60% plant: mostly grasses (plants and seeds) (Bent 1923)	Year-round (Lowery 1974a)	
Anas strepera Gadwall	principally plants (Bent 1953)	Oct.-Mar. (Lowery 1974a)	
Anas acuta Northern pintail	13% animal: mollusks, crustaceans, insects 87% plant: pondweed, sedges and grasses (60%); other (27%) (Bent 1926)	Oct.-Mar. (Lowery 1974a)	
Anas crecca Green-winged teal	10% animal: insects, mollusks, crustaceans 90% plant: sedges, pondweeds and grasses (62%); other (28%) (Bent 1923)	Oct.-Mar. (Lowery 1974a)	
Anas discors Blue-winged teal	30% animal: worms, mollusks, insects, tadpoles 70% plant: sedges, pondweeds and grasses (43.6%); other (26.4%) (Bent 1923)	Feb.-Apr.; Sept.-Nov. (Lowery 1974a)	
Anas clypeata Northern shoveler	animal: worms, small mollusks, insects, shrimp, small fish, small frogs. plant: buds and young shoots of rushes and other aquatics; grasses (Bent 1923)	Oct.-Apr. (Lowery 1974a)	
Anas americana American widgeon	90% plant, 10% animal (from Sept.-Apr.) (Bent 1923)	Oct.-Apr. (Lowery 1974a)	

continued

Appendix 6.3(21). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Aythya collaris Ring-necked duck	19% animal: insects, mollusks; 81% plant: aquatic plants, sedges, grasses, smartweeds (Cottam 1939)	Oct.-Apr. (Lowery 1974a)	
Aythya affinis Lesser scaup	similar to A. marila (Bent 1923)	Oct.-Apr. (Lowery 1974a)	
Bucephala albeola Bufflehead	79% animal: insects, crustaceans, mollusks, fish; 21% plant: pondweeds, misc. (Cottam 1939)	Nov.-Mar. (Lowery 1974a)	
Oxyura jamaicensis Ruddy duck	72% plant: aquatic plants, grasses, sedges; 28% animal: insects, mollusks, crustaceans (Cottam 1939)	Nov.-Apr. (Lowery 1974a)	
Lophodytes cucullatus Hooded merganser	mostly insects; also small fish, frogs, mollusks, crayfish, roots of aquatic plants, seeds, grain (Bent 1923)	Nov.-Apr. (Lowery 1974a)	
Circus cyaneus Marsh hawk	small mammals, herons, ducks, coots, rails, shorebirds, songbirds	Sept.-Apr. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Falco columbarius Merlin	mostly birds: green-winged teal, shorebirds, small chickens, various songbirds; also insects, spiders, reptiles, mice, pocket gophers, squirrels, bats (Bent 1937)	Sept.-May (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Falco sparverius American kestrel	insects, amphibians, reptiles, birds, mammals (Bent 1937)	Sept.-Apr. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Rallus elegans King rail	grass seeds, insects, slugs, leeches, tadpoles, crayfish (Bent 1926)	Year-round (Lowery 1974a)	
Rallus limicola Virginia rail	earthworms, crayfish, insects, snails, small fish, some grass seeds (Bent 1926)	Oct.-Apr. (Lowery 1974a)	
Porzana carolina Sora	small mollusks, insects, seeds (Bent 1926)	Sept.-May (Lowery 1974a)	
Coturnicops noveboracensis Yellow rail		Oct.-May (Lowery 1974a)	
Laterallus jamaicensis Black rail		Nov.-Apr. (Lowery 1974a)	

continued

Appendix 6.3(21). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Porphyrula martinica Purple gallinule	rice, other seeds, worms, mollusks (Bent 1926)	Apr.-Sept. (Lowery 1974a)	
Gallinula chloropus Common gallinule	seeds, roots, soft parts of aquatic plants, snails, insects, worms (Bent 1926)	Apr.-Nov. (Lowery 1974a)	
Fulica americana American coot	leaves, fronds, seeds and roots of aquatic plants; wild celery, algae; worms, snails, insects, small fish, tadpoles (Bent 1926)	Sept.-Apr. (Lowery 1974a)	
Himantopus mexicanus Black-necked stilt	99% animal: mostly insects; also crayfish, snails, tiny fish; 1% plant: seeds of aquatic and marsh plants (Bent 1927)	Mar.-Oct. (Lowery 1974a)	
Recurvirostra americana American avocet	65% animal: insects. 35% plant: seeds of aquatic and marsh plants (Bent 1927)	Sept.-May (Lowery 1974a)	
Pluvialis squatarola Black-bellied plover	marine worms, small mollusks, crustaceans, insects, some plant material (Bent 1929)	Sept.-May (Lowery 1974a)	
Limosa haemastica Hudsonian godwit	worms, mollusks, various insects, crustaceans, other small marine life	Apr.-Jun. (Lowery 1974a)	
Numenius phaeopus Whimbrel	earthworms, sandworms, insects, mollusks, small crustaceans, some plant material	Apr.-May (Lowery 1974a)	
Tringa melanoleuca Greater yellowlegs	small fish, occasionally insects (Bent 1927)	Feb.-May; Aug.-Nov. (Lowery 1974a)	
Tringa flavipes Lesser yellowlegs	mostly insects; also small crustaceans, small fish, worms (Bent 1927)	Feb.-May; Aug.-Nov. (Lowery 1974a)	
Tringa solitaria Solitary sandpiper	insects, spiders, worms, small crustaceans, small frogs (Bent 1929)	Mar.-Apr.; Aug.-Oct. (Lowery 1974a)	
Actitis macularia Spotted sandpiper	insects, occasionally small fish	Mar.-Apr.; Aug.-Oct. (Lowery 1974a)	
Steganopus tricolor Wilson's phalarope	aquatic insects and their larvae; amphipods; seeds of aquatic plants (Bent 1927)	Apr.-May; Jul.-Sept. (Lowery 1974a)	

continued

Appendix 6.3(21). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Capella gallinago Common snipe	mostly earthworms, also other worms, insects, some seeds of marsh plants (Bent 1927)	Oct.-Apr. (Lowery 1974a)	
Limnodromus griseus Short-billed dowitcher	worms, insects, fish eggs, small mollusks, seeds and roots of aquatic plants (Bent 1927)	Mar.-May; Sept.-Nov. (Lowery 1974a)	
Limnodromus scolopaccus Long-billed dowitcher	insect larvae, some plant material (Bent 1927)	Oct.-May (Lowery 1974a)	
Calidris mauri Western sandpiper	insects, marine worms, small snails (Bent 1927)	Aug.-May (Lowery 1974a)	
Calidris minutilla Least sandpiper	mostly insects; also small crustaceans, worms (Bent 1927)	Aug.-Apr. (Lowery 1974a)	
Calidris bairdii Baird's sandpiper	insects, amphipods, algae (Bent 1927)	Mar.-May; Jul.-Oct. (Lowery 1974a)	
Calidris melanotos Pectoral sandpiper	insects (66%); amphipods (22.3%); algae (10.5%); also other animals, seeds (Bent 1927)	Mar.-May; Aug.-Oct. (Lowery 1974a)	
Calidris alpina Dunlin	small mollusks, small crustaceans, insects, marine worms, occasionally seeds (Bent 1927)	Oct.-May (Lowery 1974a)	
Calidris hemantopus Stilt sandpiper	animal (70%): small worms, mollusks, insects plant (30%): seeds (Bent 1927)	Apr.-May (Lowery 1974a)	
Childonias niger Black tern	small fish, insects (Bent 1921)	Apr.-Sept. (Lowery 1974a) (non-breeding)	
Asie clammeus Short-eared owl	mostly small mammals, also small birds, insects (Bent 1937)	Oct.-May (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Chordeiles minor Common nighthawk	insects, mostly flying (Bent 1940)	Apr.-Oct. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Chaetura pelagica Chimney swift	flying insects (Bent 1940)	Mar.-Oct. (Lowery 1974a)	

continued

Appendix 6.3(21). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Megaceryle alcyon Belted kingfisher	almost wholly fish; also insects, crustaceans, mollusks, amphibians, small reptiles, birds, mice, berries (Bent 1940)	Sept.-Apr. (Lowery 1974a)	
Iridoprocne bicolor Tree swallow	81% animal: insects and spiders 21% plant: seeds and berries (Bent 1942)	Sept.-May (Lowery 1974a)	
Riparia riparia Bank swallow	insects (Bent 1942)	Apr.-May; Jul.-Oct. (Lowery 1974a)	
Hirundo rustica Barn swallow	99% animal: insects; some spiders and snails (Bent 1942)	Mar.-May; Aug.-Nov. (Lowery 1974a)	
Corvus ossifragus Fish crow	carrion, crustaceans, fish, bird eggs, insects; berries, tree fruits, seeds, some grain (Bent 1946)	Year-round (Lowery 1974a)	
Cistothorus palustris Marsh wren	insects; especially Coleoptera and Diptera (Bent 1948)	Year-round (Lowery 1974a)	
Cistothorus platensis Sedge wren	insects, spiders (Bent 1948)	Oct.-Mar. (Lowery 1974a)	
Anthus spinoletta Water pipit		Nov.-Mar. (Lowery 1974a)	
Geothlypis trichas Common yellowthroat	mostly insects, a few seeds (Bent 1953)	Mar.-Oct. (Lowery 1974a)	
Dolichonyx oryzivorus Bobolink	57% animal: insects, spiders, myriapoids; 43% plant: weed seeds, grain (Bent 1958)	May (Lowery 1974a)	
Agelaius phoeniceus Red-winged blackbird	73% plant: weed seeds, grain, fruit; 27% animal: mostly insects and spiders	Year-round (Lowery 1974a)	
Quiscalus major Boat-tailed grackle	insects, spiders, small fish, tadpoles (Bent 1958)	Year-round (Lowery 1974a)	
Passerculus sandwichensis Savannah sparrow	92% plant: seeds; 8% animal: mostly insects (winter) (Bent 1968)	Oct.-Apr. (Lowery 1974a)	

continued

Appendix 6.3(21). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Melospiza georgiana Swamp sparrow	55% insects; 45% seeds (Bent 1968)	Sept.-May (Lowery 1974)	
MAMMALS			
Didelphis virginiana Virginia opossum	insects, birds, carrion, plant material (Lowery 1974b)	Breeds in Jan.-Feb. (Lowery 1974b)	
Myotis austroriparius Southeastern myotis	insects (Lowery 1974b)	Active year-round in warm weather; mating in spring (Lowery 1974b)	
Lasiurus borealis Red bat	insects (Lowery 1974b)	Active year-round in warm weather; young born May-June (Lowery 1974b)	
Lasiurus seminolus Seminole bat	insects (Lowery 1974b)	Active year-round in warm weather; young born in June (Lowery 1974b)	
Dasypus novemcinctus Nine-banded armadillo	insects, plant material (Lowery 1974b)	Breeds in Jul.-Aug. (Lowery 1974b)	
Sylvilagus aquaticus Swamp rabbit	green plants (Lowery 1974b)	Breeds Jan.-Sept. (Lowery 1974b)	
Oryzomys palustris Marsh rice rat	plant material, insects, crustaceans, bird eggs and young (Lowery 1974b)	Breeds Mar.-Oct. (Lowery 1974b)	
Ondatra zibethicus Common muskrat	61% crayfish; also crabs, birds, fish, insects, muskrats,	Active year-round; breeding peaks Nov. and Mar. (Lowery 1974b)	x=.7 houses/ 100 acre; 1969-1971 (Palmisano 1972b)
Myocastor coypus Nutria	aquatic vegetation (Lowery 1974b)		
Procyon lotor Northern raccoon	animals and plant material (Lowery 1974b)	Breeds Dec.-Jan. (Lowery 1974b)	
Mustela vison North American mink	crayfish, rodents, birds, fish, crabs, frogs (Lowery 1974b)	Active year-round births in early spring (Lowery 1974b)	

continued

Appendix 6.3(21). Concluded.

Species	Food	Abundance or Activity	Remarks
Lutra canadensis Nearctic river otter	crabs, crayfish, fish, frogs, turtles, snakes (Lowery 1974b)	Breeds in late fall (Lowery 1974b)	
Canis ruf[illegible] Red wolf	nutria, swamp rabbit, cottontail, rice rat, cotton rat, muskrat (Riley and McBride 1972)	Breeds Jan.-Feb.; Births Mar.-Apr. (Riley and McBride 1972)	Endangered
Odocoileus virginianus White-tailed deer	plant material (Lowery 1974b)	Breeds in Sept.-Mar. (Lowery 1974b)	

Appendix 6.3(22). Representative benthic invertebrates described for the Fresh Marsh Habitat in coastal southeastern Louisiana (Thomas 1976).

- Phylum: Annelida
  - Class: Hirudinea (leeches)
  - Family: Hirudidae
    - *Macrobdella ditetra* (Moore)
  - Family: Glossiphoniidae
    - *Placobdella* sp.

- Phylum: Mollusca
  - Family: Ancylidae (limpets)
    - *Laevapex* sp.
  - Family: Bythinidae (snails)
    - *Pomatopyrgus* sp.
  - Family: Lymnaeidae (pond snails)
    - *Pseudosuccinea* sp.
  - Family: Physidae (pouch snails)
    - *Physa* sp.
  - Family: Planorbidae (orb snails)
    - *Heliosoma* sp.
    - *Gyraulus* sp.
  - Family: Viviparidae (large snails)
    - *Viviparus* sp.
  - Family: Sphaeriidae (fingernail clams)
    - *Sphaerium* sp.
  - Family: Unionidae (clams)
    - *Anodonta* grandis (Soy)
    - *Anodonta* imbecillus (Soy)
    - *Villosa lienosa*

- Phylum: Arthropoda
  - Class: Crustacea
  - Family: Balanidae (barnacles)
    - *Balanus* sp.
  - Order: Isopoda (aquatic sow bugs)
  - Family: Asellidae
    - *Asellus* sp.
  - Order: Amphipoda (scuds, sideswinners)
  - Family: Amphithoidae
    - *Cymadusa compta* (Smith)
  - Family: Gammaridae
    - *Crangonyx gracilis*
    - *Gammarus fasciatus*
  - Family: Talitridae
    - *Hyalella azteca* (Saussure)
  - Order: Decapoda
  - Family: Cambaridae
    - *Cambarellus shufeldtii* (Faxon) (small crayfish)
    - *Orconectes lancifer* (Hagen) (crawfish)
    - *Procambarus clarkii* (Girard) (swamp crawfish)

- Phylum: Bryozoa (moss animalcules)
  - Family: Lophopodidae
    - *Pectinatella magnifica* (Leidy)

Appendix 6.3(23). Shrubs and other plants in the Swamp Forest Habitat (Conner 1975).

SHRUBS	COMMON NAME
Cephalanthus occidentalis	Buttonbush
Cornus drummondii	Roughleaf dogwood
Forestiera acuminata	Swamp privet
Itea virginica	Virginia willow
Myrica cerifera	Wax myrtle
Persea palustris	Swampbay
Styrax americana	American snowbell
Styrax grandifolia	Bigleaf snowbell
OTHER PLANTS	
Alternanthera philoxeroides	Alligatorweed
Cabomba caroliniana	Fanwort
Ceratophyllum demersum	Coontail
Colocasia antiquorum	Elephant's ear
Crinum americanum	Swamp lily
Egeria densa	Elodea
Eichornia crassipes	Water-hyacinth
Equisetum sp.	Horsetail
Hydrocotyle umbellata	Water pennywort
H. verticillata	Marsh pennywort
Hymenocallis eulae	Spider lily (summer-blooming)
H. occidentalis	Spider lily
Juncus effusus	Common rush
Lemna minor	Duckweed
Limnobium spongia	Frog's bit
Lobelia cardinalis	Cardinal flower
Mayaca aubletii	Mayaca
Micranthemum umbrosum	Shade mudflower
Myriophyllum brasiliense	Parrot's feather
Osmunda regalis	Royal fern
Panicum hemitomon	Maidencane
Phragmites communis	Roseaucane (common seed)
Pistia stratiotes	Water lettuce
Polygonum punctatum	Smartweed
Polypodium polypodioides	Tree fern
Pontederia cordata	Pickerel weed
Sagittaria falcata	Bulltongue
S. lancifolia	Delta potato
Saururus cernuus	Lizard's tail
Sorghum halepense	Johnson grass
Spiranthes cernua	Nodding ladies tresses
Tillandsia usneoides	Spanish moss

Appendix 6.3(24). Representative vertebrate species of the Swamp Forest Habitat in the Chenier Plain.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
AMPHIBIANS			
Ambystoma opacum Marbled salamander			
Ambystoma texanum Small-mouthed salamander			
Notophthalmus viridescens Central newt			
Amphiuma tridactylum Three-toed amphiuma			
Siren intermedia Lesser siren			
Desmognathus auriculatus Southern dusky salamander			
Eurycea quadridigitata Dwarf salamander			
Bufo woodhousel Woodhouse's toad			
Hyla cinerea Green tree frog	insects (Wright and Wright 1949)		
Hyla crucifer Spring peeper			
Hyla squirella Squirrel tree frog			
Hyla versicolor & *H. chrysocelis* Gray tree frog			

continued

Appendix 6.3(24). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Pseudacris triseriata Upland chorus frog			
Rana catesbeiana Bullfrog			
Rana clamitans Bronze frog			
Rana grylio Pig frog			
Rana sphenocephala Southern leopard frog			
Gastrophryne carolinensis Eastern narrow-mouthed toad			
REPTILES			
Alligator mississippiensis American alligator	61% crayfish; also birds, fiddler crabs, fish, insects, muskrats, turtles, shrimp, grasses, snails (Chabreck 1971)		Endangered - Tex. Threatened - La. .07/acre (Joanen and McNease 1972)
Chelydra serpentina Snapping turtle	fish (35.4%), other vertebrates (1.1%), carrion (19.6%), invertebrates (7.8%), plant material (36.2%) (Carr 1952)		
Macroclemys temmincki Alligator snapping turtle	fish, frogs, snakes, other turtles, mussels, various aquatic grasses (Carr 1952)		
Kinosternon subrubrum Mississippi mud turtle	insects, small snails (Carr 1952)		
Sternotherus carinatus Razor-backed musk turtle			
Sternotherus odoratus Stinkpot	fish (46.3%), mollusks (40.1%), also crayfish, insects, plant material for Michigan (Carr 1952)		

continued

Appendix 6.3(24). Continued.

Species	Food	Abundance or Activity	Remarks
Chrysemys floridana Missouri slider			
Chrysemys picta Southern painted turtle	juvenile: 13% plant, 85% animal adult: 89% plant, 10% animal (Carr 1952)		
Chrysemys scripta Red-eared turtle	juvenile: 30% plant, 70% animal (e.g., amphipods) adult: 89% plant, 11% animal (e.g., crayfish) (Carr 1952)		
Delrochelys reticularia Chicken turtle	tadpoles, crayfish, plant material (Carr 1952)		
Terrapene carolina Three-toed box turtle	omnivorous in captivity (Carr 1952)		
Trionyx spiniferus Spiny softshell	carnivorous		
Anolis carolinensis Green anole	insects, spiders (Smith 1946)		
Eumeces fasciatus Five-lined skink	earthworms, spiders, insects, some young lizards and mice (Smith 1946)		
Eumeces laticeps Broad-headed skink	insects (Smith 1946)		
Leilopisma laterale Ground skink	small insects, spiders, millepedes, pillbugs, sowbugs (Smith 1946)		
Coluber constrictor Racer	insects, frogs, snakes, young birds (Wright and Wright 1957)	Breeds: May Hatch: Jul.-Sept. (Wright and Wright 1957)	
Elaphe obsoleta Texas rat snake	mice, lizards, birds and their eggs, tree frogs, (Wright and Wright 1957)		
Farancia abacura Mud snake	*Amphiuma*, *Siren*, frogs (Wright and Wright 1957)		

continued

Appendix 6.3(24). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Lampropeltis doliata Louisiana milk snake			
Lampropeltis getulus Speckled king snake	other snakes, small birds, lizards, mice, rats (Wright and Wright 1957)		
Nerodia cyclopion Green water snake	Gambusia (77.6%); other fish (18.6%); tadpoles (3.5%) (Mushinsky and Hebrard 1976)	Mar.-Oct. (Mushinsky and Hebrard unpublished manuscript)	
Nerodia fasciata confluens Broad-banded water snake	fish (86.9%); frogs and toads (6.4%); tadpoles (4.8%) (Mushinsky and Hebrard 1976)	Mar.-Sept. (Mushinsky and Hebrard unpublished manuscript)	
Nerodia erythrogaster Yellow-bellied water snake	fish (65.3%); frogs and toads (27.0%); tadpoles (7.5%) (Mushinsky and Hebrard 1976)	Apr.-Aug. (Mushinsky and Hebrard unpublished manuscript)	
Nerodia rhombifera Diamondback water snake	fish (92.7%); frogs and toads (1.0%); tadpoles (6.1%) (Mushinsky and Hebrard 1976)	Mar.-Oct. (Mushinsky and Hebrard unpublished manuscript)	
Opheodrys aestivus Rough green snake	insects, spiders, snails, frogs, fish (Wright and Wright 1957)		
Thamnophis proximus Western ribbon snake	insects, fish, frogs, salamanders, mice, toads (Wright and Wright 1957)		
Thamnophis sirtalis Garter snake	earthworms, mollusks, insects, fish, salamanders, toads, frogs, small mammals, small birds (Wright and Wright 1957)		
Virginia striatula Rough earth snake	earthworms, mollusks, insects, sowbugs, small anurans, small lizards (Wright and Wright 1957)		
Agkistrodon contortrix Copperhead	frogs, small birds, small rodents (Wright and Wright 1957)		
Agkistrodon piscivorus Cottonmouth	fish, salamanders, frogs, reptiles, birds, mammals (Wright and Wright 1957)		
Crotalus horridus Canebrake rattlesnake	toads, mice, insects, small snakes, birds (Wright and Wright 1957)		

continued

Appendix 6.3(24). Continued

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
BIRDS			
Podilymbus podiceps Pied-billed grebe	mostly animal: aquatic worms and insects, snails, small frogs and fish. plants: seeds and soft parts (Bent 1910)	Oct.-Apr. (Lowery 1974a)	
Anhinga anhinga Anhinga	fish, leeches, shrimp, crayfish, insects, salamanders, frogs, young turtles and alligators, snakes (Bent 1922)	Mar.-Oct. (Lowery 1974a)	
Ardea herodias Great blue heron	mostly fish; also crustaceans, insects, frogs, lizards, snakes, birds, small mammals (Bent 1926)	Year-round (Lowery 1974a)	
Butorides striatus Green heron	small fish, earthworms, insects, tadpoles, frogs, snakes, small mammals (Bent 1926)	Mar.-Oct. (Lowery 1974a)	
Florida caerulea Little blue heron	crayfish, small crabs, insects, fish, frogs, lizards (Bent 1926)	Mar.-Oct. (Lowery 1974a)	
Casmerodius albus Great egret	small fish, snails, fiddlers, insects, frogs, lizards, small snakes, mice, some plant material (Bent 1926)	Mar.-Nov. (Lowery 1974a)	
Egretta thula Snowy egret	shrimp, small fish, fiddlers, snails, insects, crayfish, small lizards, small frogs, small snakes (Bent 1926)	Mar.-Oct. (Lowery 1974a)	
Hydranassa tricolor Louisiana heron	slugs, snails, crayfish, insects, small fish, lizards, frogs (Bent 1926)	Mar.-Nov. (Lowery 1974a)	
Nycticorax nycticorax Black-crowned night heron	mostly fish (alive or dead), worms, crustaceans, insects (Bent 1926)	Mar.-Sept. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Nyctanassa violacea Yellow-crowned night heron	snails, crayfish, crabs, fish, small reptiles, small mammals and birds (Bent 1926)	Mar.-Sept. (Lowery 1974a)	
Ixobrychus exilis Least bittern	slugs, leeches, insects, small fish, tadpoles, small frogs, lizards, small mammals	Apr.-Sept. (Lowery 1974a)	
Botaurus lentiginosus American bittern	mollusks, crayfish, insects, small fish, frogs, lizards, small snakes, mice (Bent 1926)	Oct.-May (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Mycteria americana Wood stork	fish, aquatic reptiles, insects (Bent 1926)	Jun.-Sept. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)

continued

Appendix 6.3(24). Continued.

Species	Food	Abundance or Activity	Remarks
Plegadis falcinellus Glossy ibis	insects, crayfish, young snakes (Bent 1926)	Year-round (Lowery 1974a)	
Plegadis chihi White-faced ibis	earthworms, crayfish, mollusks, crayfish, insects, small fish and frogs, newts, leeches (Bent 1926)	Year-round (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Endocimus albus White ibis	mostly crayfish, also other crustaceans, slugs, snails, small snakes, insects (Bent 1926)	Mar.-Sept. (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Anas platyrhynchos Mallard	90% plant: sedges, grasses, smartweeds, pondweeds, duckweeds, tubers, mast; 10% animal: insects, crustaceans, mollusks, fish (Bent 1923)	Oct.-Mar. (Lowery 1974a)	
Wood duck	seeds, duckweed; 10% animal: mostly insects (Bent 1923)	Year-round (Lowery 1974a)	
Aythya collaris Ring-necked duck	19% animal: insects, mollusks; 81% plant: aquatic plants, sedges, grasses, smartweeds (Cottam 1939)	Oct.-Apr. (Lowery 1974a)	
Coragyps atratus Black vulture	chiefly carrion, also young herons in rookeries (Bent 1937)	Year-round (Lowery 1974a)	
Cathartes aura Turkey vulture	carrion (Bent 1937)	Year-round (Lowery 1974a)	
Elanoides forficatus Swallow-tailed kite	snails, insects, frogs, snakes (Lowery 1974a)	Mar.-Aug. (Lowery 1974a)	
Ictinia mississippiensis Mississippi kite	mostly insects, some small frogs, lizards, snakes (Lowery 1974a)	Apr.-Oct. (Lowery 1974a)	
Buteo lineatus Red-shouldered hawk	earthworms, snails, amphibians, reptiles, birds, mammals (Bent 1937)	Year-round (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Buteo platypterus Broad-winged hawk	earthworms, insects, crayfish, anurans, reptiles, birds, mammals (Bent 1937)	Apr.-Sept. (Lowery 1974a)	
Rallus elegans King rail	grass seeds, insects, slugs, leeches, tadpoles, crayfish (Bent 1926)	Year-round (Lowery 1974a)	

continued

Appendix 6.3(24). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Porzana carolina Sora	small mollusks, insects, seeds (Bent 1926)	Sept.-May (Lowery 1974a)	
Porphyrula martinica Purple gallinule	rice, other seeds, worms, mollusks (Bent 1926)	Apr.-Sept. (Lowery 1974a)	
Gallinula chloropus Common gallinule	seeds, roots, soft parts of aquatic plants, snails, insects, worms (Bent 1926)	Apr.-Nov. (Lowery 1974a)	
Tringa solitaria Solitary sandpiper	insects, spiders, worms, small crustaceans, small frogs (Bent 1929)	Mar.-Apr.; Aug.-Oct. (Lowery 1974a)	
Actitis macularia Spotted sandpiper	insects, occasionally small fish	Mar.-Apr.; Aug.-Oct. (Lowery 1974a)	
Philohela minor American woodcock	earthworms, grubs, slugs, insects and their larvae (Bent 1927)	Oct.-Feb. (Lowery 1974a)	
Coccyzus americanus Yellow-billed cuckoo	mostly caterpillars-also other insects, wild berries, frogs, lizards (Bent 1940)	Apr.-Oct. (Lowery 1974a)	
Coccyzus erythophthalmus Black-billed cuckoo	similar to above; also small mollusks, fish, aquatic larvae, fruits and berries, bird eggs and young (Bent 1940)	Apr.-May; Aug.-Oct. (Lowery 1974a)	
Tyto alba Barn owl	small mammals, birds, insects, frogs (Bent 1937)	Year-round (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Otus asio Common screech owl	worms, arthropods, snails, fish, amphibians, reptiles, birds, mammals (Bent 1937)	Year-round; nesting in Mar.-Apr. (Lowery 1974a)	
Bubo virginianus Great horned owl	mostly mammals; also birds, reptiles, amphibians, fish, insects (Bent 1937)	Year-round; nesting in Dec.-Jan. (Lowery 1974a)	
Strix varia Barred owl	mammals, birds, reptiles, amphibians, fish, crayfish, insects, spiders (Bent 1937)	Year-round; nesting in February (Lowery 1974a)	
Caprimulgus carolinensis Chuck-will's-widow	mostly insects; some small birds (Bent 1940)	Apr.-May; Aug.-Oct. (Lowery 1974a)	

continued

Appendix 6.3(24). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Caprimulgus vociferus Whip-poor-will	entirely insects (Bent 1940)	Mar.-Apr. (Lowery 1974a)	
Chaetura pelagica Chimney swift	flying insects (Bent 1940)	Mar.-Oct. (Lowery 1974a)	
Colaptes auratus Common flicker	61% animal: ants and other insects 39% plant: fruits and berries (Bent 1949)	Year-round (Lowery 1974a)	
Dryocopus pileatus Pileated woodpecker	73% animal: ants, beetles; 27% plant: wild fruits and berries (Bent 1939)	Year-round (Lowery 1974a)	
Melanerpes carolinus Red-bellied woodpecker	26% animal: ants and other insects, spiders, frogs 74% plant: grains, nuts, fruits, berries (Bent 1939)	Year-round (Lowery 1974a)	
Sphyrapicus varius Yellow-bellied sapsucker	cambium, bast, sap, wild fruits; ants, beetles, wasps, other insects (Bent 1939)	Sept.-Mar. (Lowery 1974a)	
Picoides villosus Hairy woodpecker	78% animal: insects, spiders, millipedes; 22% plant: fruit, berries, grain, cambium, mast (Bent 1939)	Year-round (Lowery 1974a)	"Blue List" Nat. Aud. Soc. (1976)
Picoides pubescens Downy woodpecker	76% animal: insects 24% plant: mostly wild fruit (Bent 1939)	Year-round (Lowery 1974a)	
Myiarchus crinitus Great crested flycatcher	94% animal: insects, spiders; 6% plant: small wild fruits and berries (Bent 1942)	Apr.-Sept. (Lowery 1974a)	
Empidonax flaviventris Yellow-bellied flycatcher	97% animal: insects, spiders; 3% plant: small fruits, some seeds (Bent 1942)	Aug.-Oct. (Lowery 1974a)	
Empidonax virescens Acadian flycatcher	97% animal: insects, spiders, millipedes; 3% plant: fruits and berries (Bent 1942)	Apr.-Oct. (Lowery 1974a)	
Empidonax traillii Willow flycatcher	96% animal: insects, spiders, millipedes; 4% plant: fruits, berries, seeds (Bent 1942)	Aug.-Sept. (Lowery 1974a)	
Empidonax alnorum Alder flycatcher		Aug.-Sept. (Lowery 1974a)	

continued

Appendix 6.3(24). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Dendroica discolor Prairie warbler	100% insects, spiders (Bent 1953)	Mar.-Aug. (Lowery 1974a)	
Dendroica fusca Blackburnian warbler	mostly insects (Bent 1953)	Apr.-May (Lowery 1974a)	
Dendroica magnolia Magnolia warbler	almost wholly insects (Bent 1953)	Apr.-May; Sept.-Oct. (Lowery 1974a)	
Dendroica coronata Myrtle warbler	berries, seeds, insects (winter) (Bent 1953)		
Dendroica striata Blackpoll warbler	almost wholly insects; some seeds and berries (Bent 1953)	Apr.-May (Lowery 1974a)	
Dendroica castanea Bay-breasted warbler	almost wholly insects; some fruit (Bent 1953)	Apr.-May (Lowery 1974a)	
Setophaga ruticilla American redstart	mostly insects (Bent 1953)	Mar.-Apr.; Aug.-Oct. (Lowery 1974a)	
Seiurus aurocapillus Oven bird	earthworms, mollusks, myriapods, spiders, insects, seeds, small fruit (Bent 1953)	Mar.-May; Aug.-Oct. (Lowery 1974a)	
Seiurus noveboracensis Northern waterthrush	almost wholly animal: small worms, minnows, crustaceans, mollusks, insects; a few seeds (Bent 1953)	Aug.-Oct. (Lowery 1974a)	
Seiurus motacilla Louisiana waterthrush	small mollusks, small fish, insects, some seeds (Bent 1953)	Mar.-Apr.; Aug.-Oct. (Lowery 1974a)	
Limnothlypis swainsoni Swainson's warbler	insects, spiders (Bent 1953)	Mar.-Sept. (Lowery 1974a)	
Helmintheros vermivorus Worm-eating warbler	insects, spiders (Bent 1953)	Apr.-May; Jul.-Aug. (Lowery 1974a)	
Protonotaria citrea Prothonotary warbler	insects, spiders, small mollusks (Bent 1953)	Mar.-Sept. (Lowery 1974a)	

continued

Appendix 6.3(24). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Toxostoma rufum Brown thrasher	63% animal: worms, snails, crayfish, insects, amphibians, lizards; 37% plant: fruits, berries (Bent 1948)	Year-round (Lowery 1974a)	
Turdus migratorius American robin	40% animal: worms, mollusks, insects 60% plant: berries and fruits (Bent 1949)	Oct.-Mar. (Lowery 1974a)	
Hylocichla mustelina Wood thrush	62% animal: insects, spiders, earthworms 38% plant: berries (Bent 1949)	Mar.-Oct. (Lowery 1974a)	
Catharus guttata Hermit thrush	wild fruits and berries (winter) (Bent 1949)	Oct.-Mar. (Lowery 1974a)	
Catharus ustulata Swainson's thrush	64% animal: insects, spiders, millipedes, snails, sowbugs, worms; 36% plant: fruits, berries, seeds (Bent 1949)	Apr.-May (Lowery 1974a)	
Catharus minimus Gray-cheeked thrush	75% animal: insects, spiders, other animals; 25% plant: fruits and berries (Bent 1949)	Apr.-May (Lowery 1974a)	
Catharus fuscescens Veery	60% animal: insects, spiders, sowbugs, snails; 40% plant: fruits and berries (Bent 1949)	Apr.-May (Lowery 1974a)	
Polioptila caerulea Blue-gray gnatcatcher	insects, spiders (Bent 1949)	Mar.-Oct. (Lowery 1974a)	
Regulus satrapa Golden-crowned kinglet	almost wholly insects (Bent 1949)	Oct.-Mar. (Lowery 1974a)	
Regulus calendula Ruby-crowned kinglet	94% animal: insects, spiders, pseudoscorpions; 6% plant: fruit, berries, weed seeds (Bent 1949)	Oct.-Apr. (Lowery 1974a)	
Bombycilla cedorum Cedar waxwing	Berries (Lowery 1974)	Nov.-Apr. (Lowery 1974a)	
Vireo griseus White-eyed vireo	90% animal: insects, spiders; 10% plant: berries and fruits (Bent 1950)	Mar.-Oct. (Lowery 1974a)	
Vireo flavifrons Yellow-throated vireo	98% animal: mostly insects, some spiders; 2% plant: wild fruits and berries (Bent 1950)	Mar.-Sept. (Lowery 1974a)	

continued

Appendix 6.3(24). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Vireo solitarius Solitary vireo	(January) 24% plant: wild fruits and berries; 76% animal: mostly insects (Bent 1950)	Oct.-Apr. (Lowery 1974a)	
Vireo olivaceus Red-eyed vireo	86% animal: almost wholly insects; 14% plant: wild fruits and berries (Bent 1950)	Apr.-Oct. (Lowery 1974a)	
Vireo philadelphicus Philadelphia vireo	93% animal: mostly insects, some spiders; 7% plant: wild fruits and berries (Bent 1950)	Aug.-Oct. (Lowery 1974a)	
Vireo gilvus Warbling vireo	mostly insects, some plant material (Bent 1950)	Apr.-Aug. (Lowery 1974a)	
Mniotilta varia Black-and-white warbler	almost entirely insects and spiders, trace of plant material (Bent 1953)	Apr.-May; Sept.-Oct. (Lowery 1974a)	
Vermivora chrysoptera Golden-winged warbler	insects, spiders (Bent 1953)	Apr.-May; Aug.-Sept. (Lowery 1974a)	
Vermivora pinus Blue-winged warbler	insects, spiders (Bent 1953)	Apr.-May; Aug.-Sept. (Lowery 1974a)	
Vermivora peregrina Tennessee warbler	insects, spiders, snails, trace of plant material (Bent 1953)	Apr.-May; Sept.-Oct. (Lowery 1974a)	
Vermivora celata Orange-crowned warbler	berries, fruits, insects (winter) (Bent 1953)	Nov.-Apr. (Lowery 1974a)	
Parula americana Northern parula warbler	insects, spiders (Bent 1953)	Mar.-Oct. (Lowery 1974a)	
Dendroica caerulea Cerulean warbler	insects (Bent 1953)	Apr.-May; Aug.-Sept. (Lowery 1974a)	
Dendroica dominica Yellow-throated warbler	insects, spiders (Bent 1953)	Mar.-Aug. (Lowery 1974a)	
Dendroica virens Black-throated green warbler	insects, spiders (Bent 1953)	Apr.-May; Sept.-Nov. (Lowery 1974a)	

continued

Appendix 6.3(24). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Empidonax minimus Least flycatcher	98% animal: insects, spiders; 2% plant: fruits, berries, seeds (Bent 1942)	Sept.-Oct. (Lowery 1974a)	
Contopus virens Eastern wood pewee	99% animal: insects, spiders, millipedes; 1% plant: berries (Bent 1942)	Mar.-Oct. (Lowery 1974a)	
Nutallornis borealis Olive-sided flycatcher	100% insects (Bent 1942)	Aug.-Sept. (Lowery 1974a)	
Cyanocitta cristata Blue jay	24% animal: insects, spiders, myriapods, small fish, amphibians, birds, mice; 76% plant: grain, berries, mast (Bent 1946)	Year-round (Lowery 1974a)	
Corvus brachyrhynchos Common crow	28% animal: insects, spiders, snails, crustaceans, amphibians, birds, mammals, carrion; 72% plant: grain, beans, fruit, berries (Bent 1946)	Year-round (Lowery 1974a)	
Parus carolinensis Carolina chickadee	72% animal: insects, spiders; 28% plant: seeds, berries (Bent 1946)	Year-round (Lowery 1974a)	
Parus bicolor Tufted titmouse	67% animal: insects, snails; 33% plant: fruit, berries, mast (Bent 1946)	Year-round (Lowery 1974a)	
Certhia familiaris Brown creeper	mostly insects, also spiders, pseudoscorpions (Bent 1948)	Oct.-Mar. (Lowery 1974a)	
Troglodytes aedon Northern house wren	98% arthropods; 2% plant material (Bent 1948)	Sept.-Apr. (Lowery 1974a)	
Troglodytes troglodytes Winter wren	almost wholly insects and spiders (Bent 1948)	Oct.-Mar. (Lowery 1974a)	
Thryothorus ludovicianus Carolina wren	94% animal: insects, spiders, millipedes, sowbugs, snails, lizards, treefrogs, snakes; 6% plant: fruit, seeds, berries, mast (Bent 1948)	Year-round (Lowery 1974a)	
Dumetella carolinensis Gray catbird	44% animal: insects, spiders; 56% plant: fruit and berries (Bent 1948)	Apr.-May; Sept.-Oct. (Lowery 1974a)	

continued

Appendix 6.3(24). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Geothlypis trichas Common yellowthroat	mostly insects, a few seeds (Bent 1953)	Mar.-Oct. (Lowery 1974a)	
Geothlypis formosa Kentucky warbler	insects, spiders, some berries (Bent 1953)	Apr.-Sept. (Lowery 1974a)	
Geothlypis philadelphia Mourning warbler	beetles, spiders (Bent 1953)	Aug.-Oct. (Lowery 1974a)	
Wilsonia citrina Hooded warbler	insects (Bent 1953)	Mar.-Oct. (Lowery 1974a)	
Wilsonia pusilla Wilson's warbler	insects; occasionally fruit (Bent 1953)	Sept.-Oct. (Lowery 1974a)	
Wilsonia canadensis Canada warbler	insects, spiders (Bent 1953)	Sept. (Lowery 1974a)	
Agelaius phoeniceus Red-winged blackbird	73% plant: fruit, grain, weed seeds; 27% animal: mostly insects, some spiders and myriapods (Bent 1953)	Year-round (Lowery 1974a)	
Euphagus carolinus Rusty blackbird	53% animal: insects, spiders, myriapods, crustaceans, amphibians, snails, small fish; 47% plant: grain, seeds, fruit, mast (Bent 1958)	Nov.-Apr. (Lowery 1974a)	
Quiscalus quiscula Common grackle	30% animal: insects, spiders, myriapods, crayfish, earthworms, sowbugs, reptiles, snails, fish, amphibians, birds, mice; 70% plant: grain (esp. corn), fruit, weed seeds, acorns (Bent 1958)	Year-round (Lowery 1974a)	
Piranga olivacea Scarlet tanager	88% animal: insects; 12% plant: berries (Bent 1958)	Apr.-May (Lowery 1974a)	
Piranga rubra Summer tanager	insects, spiders, fruits, berries (Bent 1958)	Apr.-Sept. (Lowery 1974a)	
Pheuticus ludovicianus Rose-breasted grosbeak	52% animal: mostly insects; 48% plant: wild fruits, seeds	Apr.-May (Lowery 1974a)	
Carpodacus purpureus Purple finch	mostly seeds (winter) (Bent 1968)	Nov.-Feb. (Lowery 1974a)	

continued

Appendix 6.3(24). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Junco hyemalis Slate-colored junco	seeds, some insects (Bent 1968)	Oct.-Feb. (Lowery 1974a)	
Zonotrichia albicollis White-throated sparrow	mostly weed seeds, small fruits, some insects (Bent 1968)	Sept.-Apr. (Lowery 1974a)	
Melospiza georgiana Swamp sparrow	55% insects, 45% weed seeds (Bent 1968)	Sept.-May (Lowery 1974a)	
MAMMALS			
Didelphis virginiana Virginia opossum	insects, birds, carrion, plant material (Lowery 1974b)	Breeds in Jan.-Feb. (Lowery 1974b)	
Blarina brevicauda Short-tailed shrew	animals, plants (Lowery 1974b)		
Myotis austroriparius Southeastern myotis	insects (Lowery 1974b)	Active year-round in warm weather; mating in spring (Lowery 1974b)	
Lasiurus borealis Red bat	insects (Lowery 1974b)	Active year-round in warm weather; young born May-June (Lowery 1974b)	
Lasiurus seminolus Seminole bat	insects (Lowery 1974b)	Active year-round in warm weather; young born in June (Lowery 1974b)	
Lasiurus cinereus Hoary bat	insects		
Desypus novemcinctus Nine-banded armadillo	insects, plant material (Lowery 1974b)	Breeds in Jul.-Aug. (Lowery 1974b)	
Sylvilagus aquaticus Swamp rabbit	green plants	Active year-round; breeds Jan.-Sept. (Lowery 1974b)	0.38/acre (bottomland) Murray 1970

continued

Appendix 6.3(24). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Sciurus carolinensis Gray squirrel	plant material (Lowery 1974b)	Active year-round; breeds Dec.-Feb.; May-Aug. (Lowery 1974b)	
Sciurus niger Fox squirrel	plant material, insects (Lowery 1974b)	Active year-round; breeds Jan., May-Jun. (Lowery 1974b)	
Glaucomys volans Southern flying squirrel	plant material, birds (Lowery 1974b)	Active year-round; births in spring and fall (Lowery 1974b)	
Oryzomys palustris Marsh rice rat	plant material, insects, crustaceans, bird eggs and young (Lowery 1974b)	Breeds in Mar.-Oct. (Lowery 1974b)	
Peromyscus gossypinus Cotton mouse	plant material (Lowery 1974b)	Active year-round; breeding lowest in summer (Lowery 1974b)	
Sigmodon hispidus Hispid cotton rat	plant material; bird eggs and young, insects, crayfish (Lowery 1974b)	Active and breeding year-round (Lowery 1974b)	
Neotoma floridana Eastern wood rat	plant material, snails, insects (Lowery 1974b)	Active year-round (Lowery 1974b)	
Ondatra zibethicus Common muskrat	plant material; aquatic animals (Lowery 1974b)	Active year-round; breeding peaks Nov. and Mar. (Lowery 1974b)	
Myocastor coypus Nutria	aquatic vegetation (Lowery 1974b)		
Urocyon cinereoargenteus Gray fox	rats, mice, insects, berries, fruit, corn, mast (Lowery 1974b)	Active year-round; breeds late winter (Lowery 1974b)	
Euarctos americanus American black bear	acorns, berries, meat (Lowery 1974b)	(Hibernates" Nov.-Mar. (Lowery 1974b)	
Procyon lotor Northern raccoon	animals and plant material (Lowery 1974b)	Breeds in Dec.-Jan. (Lowery 1974b)	
Mustela vison North American mink	crayfish, rodents, birds, fish, crabs, frogs (Lowery 1974b)	Active year-round births in early spring (Lowery 1974b)	

continued

Appendix 6.3(24). Concluded.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Mephitis mephitis Striped skunk	insects, crayfish, amphibians, small rodents, small amounts of plant material (Lowery 1974b)	Active year-round (Lowery 1974b)	
Lutra canadensis Nearctic river otter	crabs, crayfish, fish, frogs, turtles, snakes (Lowery 1974b)	Breeds in late fall (Lowery 1974b)	
Lynx rufus Bobcat	rabbits, squirrels, small rodents, small birds, carrion (Lowery 1974b)	Mates mid-winter, birth in early wpring (Lowery 1974b)	
Odocoileus virginianus White-tailed deer	plant material (Lowery 1974b)	Breeds in Sept.-Mar. (Lowery 1974b)	1/21-1/73 bottomland (Murray 197

Appendix 6.3(25). Macroinvertebrates identified in the Swamp Forest Habitat of coastal southeastern Louisiana (Thomas 1975, Lafourche Parish; Zizer 1975, Ascension Parish; Louten and Bouchard 1976, Lafourche Parish).

- Phylum Coelenterata
  - Class Hydrozoa
    - Family Hydridae
      - *Hydra* spp.

- Phylum Platyhelminthes
  - Class Turbellaria (flatworms)
    - Family Planariidae
      - *Dugesia* sp.
    - Family Macrostomidae
      - *Macrostomum* sp.
    - Family Typhloplanidae
      - *Mesostoma* sp.

- Phylum Ectoprocta (Bryozoa)
  - Class Phylactolaemata
    - Family Plumatellidae
      - *Fredericella* sp.

- Phylum Annelida
  - Class Oligochaeta (earthworms)
    - Family Naididae
      - *Dero* spp.
      - *Aulophorus* spp.
      - *Pristina* spp.
      - *Nais* spp.
  - Class Hirudinea (leeches)
    - Family Glossiphoniidae
      - *Helobdella fusca*
      - *Helobdella lineata*
      - *Placobdella papillifera*
      - *Placobdella parasitica*

- Phylum Mollusca
  - Class Gastropoda
    - Family Ancylidae (limpets)
      - *Ferrissia* sp.
    - Family Lymnaeidae (pond snails)
      - *Lymnaea* sp.
    - Family Physidae (pouch snails)
      - *Physa* sp.
    - Family Planorbidae (orb snails)
      - *Heliosoma anceps*
      - *Gyraulus* sp.
      - *Promenetus* sp.
    - Family Amnicolidae
    - Family Viviparidae
      - *Viviparus* sp.

continued

Appendix 6.3(25). Continued

- Class Pelecypoda (bivalves)
    - Family Sphaeridae (fingernail clams, seed shells)
        - *Pisidium* sp.
        - *Musculium* sp.

- Phylum Arthropoda
    - Class Arachnoidea
        - Order Hydracarina (water mites)
            - Family Hydrachnidae
                - *Hydrachna* sp.
            - Family Limnesiidae
                - *Limnesia* sp.
            - Family Unionicolidae
                - *Koenikea* sp.
                - *Neumania* sp.
                - *Unionicola* sp.
            - Family Pionidae
                - *Piona* sp
            - Family Arrenuridae
                - *Arrenurus* spp.

    - Class Crustacea
        - Order Isopoda (aquatic sow bugs)
            - Family Asellidae
                - *Asellus militaris*
        - Order Amphipoda (scuds, sideswimmers)
            - Family Talitridae
                - *Hyalella azteca*
        - Order Decapoda
            - Family Astacidae
                - *Cambarellus shutfeldti*
                - *Procambarus clarkii* (swamp crawfish)
            - Family Portunidae
                - *Callinectes sapidus* (blue crab) (rare)
            - Family Palaemonidae
                - *Palaemonetes paludosus*

    - Class Insecta
        - Order Ephemeroptera (mayflies)
            - Family Caenidae
                - *Caenis diminuta*
                - *Caenis* sp.
            - Family Baetidae
                - *Callibaetis* sp.
        - Order Odonata (dragonflies, damselflies)
            - Family Gomphidae
                - *Aphylla williamsoni*
            - Family Aeschnidae
                - *Nasiaeschna pentacantha*
                - *Anax junius*
                - *Coryphaeschna ingens*
                - *Epiaeschna heros*

continued

- Family Libellulidae
  - *Perithemis tenera*
  - *Pachydiplax longipennis*
  - *Erythemis simolicicollis*
  - *Erhthrodiplax minuscula*
  - *Erythrodiplax berenice*
  - *Cannacria gravida*
  - *Celithemis eponina*
  - *Libellula incesta*
  - *Libellula needhami*
  - *Libellula vibrans*
  - *Trames lacerata*
  - *Trames onusta*
  - *Pantala flavescens*
  - *Pantala hymenea*
- Family Lestidae
  - *Lestes* sp.
- Family Coenagrionidae
  - *Enallagma signatum*
  - *Ischnura prognatha*
  - *Ischnura rambur*
  - *Anomalagrion hastatum*

Order Orthoptera
- Family Tridactylidae (pygmy sand crickets)
  - *Tridactylus* sp.

Order Hemiptera (true bugs)
- Family Corixidae (water boatmen)
- Family Notonectidae (back swimmers)
  - *Buenoa elegans*
  - *Buenoa scimitra*
  - *Notonecta undulata*
  - *Notonecta uhleri*
- Family Pleidae (pygmy backswimmers)
  - *Plea striola*
- Family Naucoridae (creeping water bugs)
  - *Pelocoris femoratus*
- Family Belostomatidae (giant water bugs)
  - *Belostoma fusciventre*
  - *Belostoma bakeri*
  - *Belostoma flumineum*
  - *Belostoma lutarium*
  - *Belostonia testaceum*
  - *Lethocerus griseus*
  - *Lethocerus uhleri*
- Family Nepidae (water scorpions)
  - *Curicta drakei*
  - *Ranatra buenoi*
  - *Ranatra nigra*
  - *Ranatra australis*
- Family Gerridae (water striders, pond skaters)
  - *Trepobates* sp.
  - *Rheumatobates hungerfordi*
  - *Gerris canaliculatus*
  - *Gerris marginatus*
  - *Limnogonus hesione*

continued

Appendix 6.3(25). Continued

Family Veliidae (broad-shouldered water striders)
Velia watsoni
Velia brachialis
Microvelia hinei
Family Hydrometridae (marsh treaders)
Hydrometra martini
Hydrometra australis spp.
Hydrometra hungerfordi
Family Hebridae (velvet water bugs)
Hebrus sp.
Family Mesoveliidae (water treaders)
Mesovelia mulsanti bisignata
Mesovelia amoena
Family Saldidae (shore bugs)
Saldula sp.
Order Coleoptera (beetles)
Family Haliplidae (crawling water beetles)
Peltodytes sexmaculatus
Peltodytes dunavani
Peltodytes sp.
Family Coccinellidae
Pentilia misella
Scymnus (*Pullus*) *securus*
Scymnus creperus
Scymnus socer
Scymnus bigemmens
Coccinella borealis
Coccinella stigma
Coccinella connectens
Coccinella seriata
Naemia fuscilabris
Coccinella 9-notata
Coccinella 20-maculata
Scymnus lophanthae
Psyllobora renifer
Psyllobora parinotata
Family Carabidae
Family Ciccindellidae
Cicindella trifasciata
Family Gyrinidae (whirligig beetles)
Gyrinus analis
Dineutus carolinus
Dineutus sp.
Family Noteridae (diving beetles)
Colpius inflatus
Suphisellus bicolor
Hydrocanthus sp.
Family Cytiscidae (predaceous diving beetles)
Celina slossoni
Hydrovatus sp.
Desmopachria grana
Bidessonotus inconspicuous
Bidessus granarius

continued

- *Hydroporous carolinus*
- *Hydroporous* sp.
- *Laccophilus gentilis gentilis*
- *Laccophilus fasciatus rufus*
- *Matus ovatus*
- *Coptotomus interrogatus obscurus*
- *Hydaticus bimarginatus*
- *Thermonectus basillaris*
- *Cybistor fimbriolatus*
- *Agabus* sp.
- Family Hydrophilidae (water scavenger beetles)
  - *Neohydrophilus castus*
  - *Dibolocelus ovatus*
  - *Tropisternus striolatus*
  - *Tropisternus lateralis nimbatus*
  - *Tropisternus blatchleyi*
  - *Berosus infuscatus*
  - *Derallus* sp.
  - *Enochrus* sp.
  - *Helochares maculicollis*
- Family Helodidae
  - *Scirtes* sp.
- Order Megaloptera
  - Family Corydalidae
    - *Chauloides* sp. (fishflies)
- Order Trichoptera (caddis flies)
  - Family Leptoceridae
    - *Oecetis* sp.
    - *Oecetis inconspicua*
    - *Trianodes* sp.
  - Family Psychomyiidae
    - *Cyrnellus fraternus*
- Order Lepidoptera
  - Family Pyralididae (aquatic caterpillars)
    - *Nymphula* sp.
    - *Cataclysta* sp.
- Order Diptera
  - Family Tipulidae (true crane flies)
    - *Tipula* sp.
    - *Prionocera* sp.
  - Family Culicidae
    - *Anopheles* sp. (mosquitoes)
    - *Chaoborus* sp. (phantom midges)
    - *Culex* sp.
    - *Uranotaenia* sp.
    - *Aedes* sp.
  - Family Chironomidae (Tendipedidae) (midges)
    - *Pentaneura* spp.
    - *Tanytarsus* sp.
    - *Chironomus* spp.
    - *Cricotopus* spp.

continued

Appendix 6.3(25). Concluded

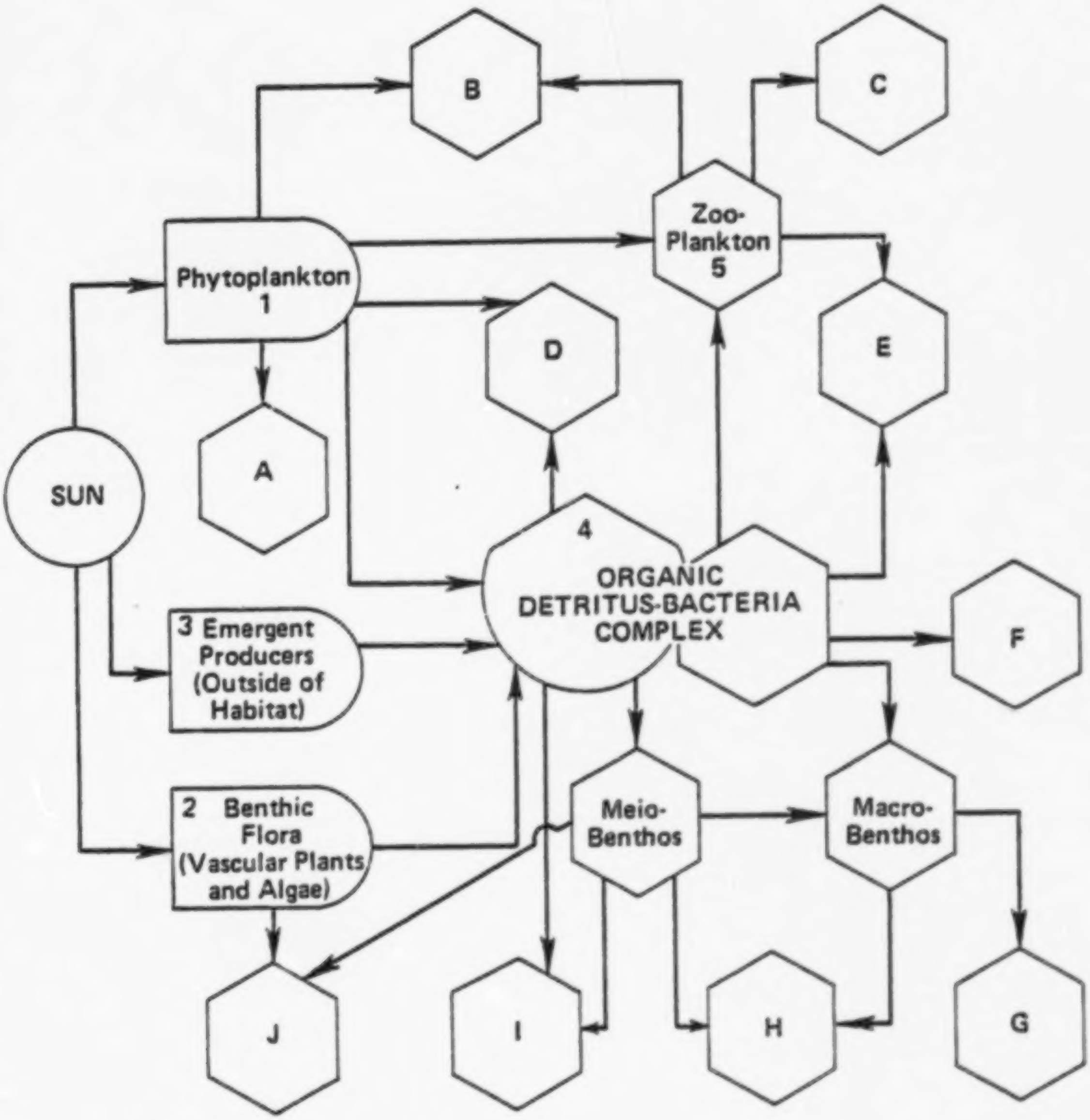
Family Ceratopogonidae (biting midges)
- *Culicoides* sp.
- *Palpomyia tibialis*
- *Palpomyia* sp.
- *Bezzia* sp.

Family Stratiomyidae (soldier flies)
- *Stratiomys* sp.
- *Eulalia* sp.
- *Odontomyia* sp.

Family Ephydridae (shore flies)

Family Tabanidae (horseflies)
- *Tabanus* sp.

Appendix 6.3(26). Generalized aquatic food web. Major sources of food originating within the water are phytoplankton (1) and benthic plants (2). This is supplemented by organic detritus input from adjacent habitats (3). Most of this organic production enters the aquatic detrital system (4). The lettered hexagonal symbols represent consumers differentiated by the items they feed on (as indicated by arrows). Listed are consumer species represented by each lettered hexagonal symbol (Darnell 1961, Day et al. 1973, Bahr and Hebrard 1976, Loesch 1976).


B
C
Zoo-Plankton 5
Phytoplankton 1
D
E
A
SUN
4
ORGANIC DETRITUS-BACTERIA COMPLEX
F
3 Emergent Producers (Outside of Habitat)
2 Benthic Flora (Vascular Plants and Algae)
Meio-Benthos
Macro-Benthos
J
I
H
G

continued

Appendix 6.3(26). Concluded.

A

Gulf menhaden (juvenile)

B

Threadfin shad (juvenile)

C

Sand seatrout (juvenile)

D

Marsh clam or rangia (adult)
Gulf menhaden (adult)

E

Bay anchovy (juvenile and adult)
Atlantic croaker (young-of-the-year)

F
Gulf menhaden (juvenile)
Striped mullet (juvenile and adult)

G

Largemouth bass (adult)
Black drum (juvenile)
Red drum (adult)
Silver perch (adult)
Spotted gar (adult)
Alligator gar (adult)
Yellow bass (adult)
Speckled trout (adult)

American alligator (adult)
Snapping turtle (adult)
Mississippi mud turtle (adult)
Red-eared turtle (juvenile and adult)
Graham's water snake (adult)
Western ribbon snake (adult)
Other snakes and turtles

Eared grebe (adult)
Great blue heron (adult)
Little blue heron (adult)
Green heron (adult)
Great egret (adult)
Snowy egret (adult)
Glossy ibis (adult)
White ibis (adult)
King rail (adult)
Clapper rail (adult)
Belted kingfisher (adult)
Fish crow (adult)
Black duck (adult)
Other ducks, gulls, terns and wading birds

G (continued)

Common muskrat (adult)
Northern raccoon (adult)
North American mink (adult)
Nearctic river otter (adult)

H

Blue crab (juvenile and adult)

Sea catfish or hardhead (juvenile and adult)
Freshwater frum (juvenile)
Blue catfish (adult)

Brown snake (adult)
Garter snake (adult)

Pied-billed grebe (adult)
Least bittern (adult)
Northern shoveler (adult)
Hooded merganser (adult)
Virginia rail (adult)
Sora (adult)
American avocet (adult)
Western sandpiper (adult)
Solitary sandpiper (adult)
Wilson's phalarope (adult)
Common snipe (adult)
Dunlin (adult)
Piping plover (adult)
Killdeer (adult)
Other shorebirds

I

White shrimp (juvenile)
Freshwater prawn (adult)

Gizzard shad (adult)
Hogchoker (adult)
Pinfish (juvenile)
Spot (juvenile and adult)
Tidewater silversides (adult)
Atlantic croaker (juvenile and adult)
Channel catfish (juvenile)
Blue catfish (juvenile)

J

Southern painted turtle (juvenile and adult)

Sheepshead (adult)
Pinfish (adult)

American coot (adult)

Canada goose (adult)
Seaside sparrow (adult)

Nutria (adult)

Appendix 6.3(27). A taxonomic listing of zooplankton identified in the Nearshore Gulf Habitat off southeastern Louisiana (Bouchard and Turner 1976).

- Protozoa
    - Dinoflagellida

- Coelenterata
    - Hydrozoa

- Ctenophora

- Rotifera

- Mollusca
    - Pelecypoda (larvae)
    - Gastropods
        - Pteropoda

- Annelida
    - Polychaeta
        - *Nereis succinea*

- Arthropoda
    - Crustacea
        - Cladocera
            - *Evadne tergentina*
            - *Penilia avirostris*
            - *Podon polyphemoides*
        - Ostracoda
        - Copepods
        - Calanoida
            - *Acartia tonsa*
            - *A. spinata*
            - *A. danae*
            - *Candacia bipinnata*
            - *Centropages hamatus*
            - *C. furcatus*
            - *Eucalanus pileatus*
            - *E.* sp.
            - *Euchaeta marina*
            - *Eurytemora hirundoides*
            - *Labidocera aestiva*
            - *L.* sp.
            - *Mormonilla* sp.
            - *Paracalanus* sp.
            - *Pontella* sp.

continued

Appendix 6.3(27). Concluded.

Pontellopsis sp.
Rhinealanus cornutus
Temora turbinata
T. stylifera
Tortanus sp.
Undinula vulgaris
Cyclopoida
Clytemnestra scutellata
Copilia marabilis
Corycaecus sp.
Halicyclops fosteri
Oithona sp.
Oncaea mediterranea
O. sp.
Saphirella sp.
Sapphrina nigromaculata
S. sp.
Harpacticoida
Alteutha sp.
Euterpina scutifrons
Macrostetella sp.
Caligoida
Caligus sp.
Cirripedia
Nauplii
Malocostraca
Amphipoda
Isopoda
Cumacea
Mysidacea
Stomatopoda (larvae)
Decapoda
Anomura
Brachyura (Zoeae)

VIII. Echinodermata

IX. Chaetognatha (arrow worms)
Sagitta sp.

X. Chordata (phylum)
Urochordata (tunicates)
Vertebrata (fish larvae)

Appendix 6.3(28). A taxonomic list of benthic infauna taken by ponar grab sampler along the southeastern Louisiana coast (Ragan 1976).

Coelenterata
  Scyphozoa: Medusae
  Anthozoa: Sea anemones

Nemertinea: Ribbon worms

Aschelminthes
  Nematoda: Roundworms

Annelida
  Polychaeta: Sandworms

Mollusca
  Gastropoda:
Cancellaria reticulata
Oliva sayana
Polinices duplicata
Other gastropods

  Pelecypoda:
Mulina sp.
Other Pelecypods

Arthropoda
  Crustacea
Subclass Malacostraca
    Isopoda: Isopods
    Amphipoda: Amphipods
   Clibanarius vittatus (hermit crab)
   Other hermit crabs
   Spider crabs
   Unidentified crabs
   Snapping shrimp - *Crangon* sp.
   Sea bobs - *Xiphopenaeus* sp.
   Unidentified shrimp

Phoronida

Chaetognatha
  Arrow worm - *Sagitta* sp.

Echinodermata
  Ophiuroidea: Brittle star

Chordata
  Cephlachordata - *Salpa*
  Vertebrata:
    Goby
    Juvenile fish

Appendix 6.3(29). Representative vertebrates, excluding fishes, of the Nearshore Gulf Habitat in the Chenier Plain.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
REPTILES			
Chelonia mydas Atlantic green turtle			Threatened
Eretmochelys umbricata Atlantic hawksbill			Endangered
Caretta caretta Atlantic loggerhead			Endangered
Dermochelys coriacea Atlantic leatherback			Threatened
BIRDS			
Gavia immer Common loon	principally fish; also crustaceans and roots of aquatic plants (Bent 1919)	Oct.-Apr. (Lowery 1974a)	
Podiceps auritus Horned grebe	shrimp and other crustaceans, small fish, some plant material, feathers (Bent 1919)	Oct.-Apr. (Lowery 1974a)	
Podiceps nigricollis Eared grebe	insects, shrimp, some water plants, feathers (Bent 1919)	Oct.-May (Lowery 1974a)	
Podilymbus podiceps Pied-billed grebe	mostly animal: aquatic worms and insects, snails, small frogs and fish. plants: seeds and soft parts (Bent 1919)	Oct.-Apr. (Lowery 1974a)	
Pelecanus occidentalis Brown pelican			Extinct in Chenier Plain
Phalacrocorax auritus Double-crested cormorant	mostly fish; rarely crustaceans, mollusks, eel grass (Bent 1922)	Sept.-Apr.	"Blue List" Nat. Aud. Soc. (1976)
Phalacrocorax olivaceus Olivaceous cormorant		Year-round	

continued

Appendix 6.3(29). Continued.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Fregata magnificens Magnificent frigate bird	mostly fish (Bent 1922)	Apr.-Oct. (Lowery 1974a)	
Aythya marila Greater scaup	crustaceans, mollusks, aquatic plants (Bent 1923)	Nov.-Apr. (Lowery 1974a)	
Aythya affinis Lesser scaup	similar to *A. marila* (Bent 1923)	Oct.-Apr. (Lowery 1974a)	
Bucephala clangula Common goldeneye	similar to scaup, but also minnows, small frogs, tadpoles, crayfish, snails, insects (Bent 1923)	Nov.-Feb. (Lowery 1974a)	
Clangula hyemalis Old squaw	88% animal: crustaceans, mollusks, insects, fish; 12% plant: grasses, pondweeds, misc. (Cottam 1939)	Nov.-Apr. (Lowery 1974a)	
Melanitta deglandi White-winged scoter	94% animal: mollusks, crustaceans, insects, fish; 6% plant: aquatic plants (Cottam 1939)	Oct.-May (Lowery 1974a)	
Melanitta perspicillata Surf scoter	88% animal: mollusks, crustaceans, insects, fish, echinoderms; 12% plant: pondweeds, misc. (Cottam 1939)	Oct.-May (Lowery 1974a)	
Melanitta nigra Black scoter	90% animal: mollusks, crustaceans, insects, fish, echinoderms; 10% plant: aquatic plants, algae (Cottam 1939)	Oct.-May (Lowery 1974a)	
Mergus serrator Red-breasted merganser	primarily fish; also crustaceans and mollusks (Bent 1923)	Nov.-Apr. (Lowery 1974a)	
Pandion haliaetus Osprey	bowfin, carps, catfish, eel, flounder, goldfish, menhaden, mullet, pickerel, shad, sunfish (Bent 1937)	Sept.-Dec., Feb.-May (Lowery 1974a)	
Falco peregrinus American peregrine falcon	mostly birds: gulls, terns, ducks, coots, gallinules, rails, shorebirds, quail, kestrel, songbirds; also rodents, rabbits, insects (Bent 1937)	Sept.-May (Lowery 1974a)	Endangered
Larus argentatus Herring gull	dead fish and other detritus; live fish, crustaceans, mollusks, echinoderms, worms, insects (Bent 1921)	Nov.-Apr. (Lowery 1974a)	

continued

Appendix 6.3(29). Concluded.

Species	Food	Seasonal Peaks of Abundance or Activity	Remarks
Larus delawarensis Ring-billed gull	refuse, insects (Bent 1921)	Oct.-Apr. (Lowery 1974a)	
Larus atricilla Laughing gull	mostly small fish; also eggs of other seabirds, refuse (Bent 1921)	Year-round (Lowery 1974a)	
Larus philadelphia Bonaparte's gull	small fish, crustaceans, marine worms, insects (Bent 1921)	Oct.-Apr. (Lowery 1974a)	
Sterna forsteri Forster's tern	insects, floating carrion (Bent 1921)	Year-round (Lowery 1974a)	
Sterna hirundo Common tern	almost wholly small fish; also shrimp and aquatic insects (Bent 1921)	Sept.-May (Lowery 1974a)	
Sterna albifrons Least tern	small fish; some crustaceans and insects (Bent 1921)	Apr.-Aug. (Lowery 1974a)	
Sterna maxima Royal tern	almost wholly small fish; also crabs, shrimp (Bent 1921)	Year-round (Lowery 1974a)	
Sterna sandvicensis Sandwich tern	almost wholly small fish; also shrimp, squid (Bent 1921)	Apr.-Aug. (Lowery 1974a)	
Sterna caspia Caspian tern	almost wholly small fish; also shrimp and other surface-swimming aquatic life (Bent 1921)	Year-round (Lowery 1974a)	
Chlidonias niger Black tern	small fish, insects (Bent 1921)	Apr.-Sept. (Lowery 1974a) (non-breeding)	
Rynchops niger Black skimmer	small fish; small crustaceans (Bent 1921)	Year-round (Lowery 1974a)	
MAMMALS			
Tursiops truncatus Atlantic bottle-nosed dolphin	mullet, other fish, shrimp (Lowery 1974b)		Intelligent (Lilly 1967)

Appendix 6.3(30). Fishes of the Nearshore Gulf and Inland Open Water habitats in the Chenier Plain.

	Trophic Relations	Local Distribution	Relative and Seasonal Abundance	Economic Importance
FAMILY CARCHARHINIDAE REQUIEM SHARKS				
Aprionodon isodon (Valenciennes) Finetooth Shark	Carnivore; predator/scavenger (Conner Unpubl.)	Demersal; usually in deeper marginal areas; sometimes move into beach area (Conner Unpubl.)	Mainly warm months (Conner Unpubl.)	None
Carcharhinus leucas (Valenciennes) Bull Shark	Carnivore; predator/scavenger; fishes, macroinvertebrates, carrion (Bigelow and Schroeder 1948	Demersal; widespread (Conner Unpubl.)	Most common large shark (Conner Unpubl.)	Minor value as industrial bottomfish
Carcharhinus limbatus (Valenciennes) Blacktip Shark	Carnivore; mainly predator on fishes (Bigelow and Schroeder 1948)	Demersal; usually in deeper marginal areas; occasionally move to shore (Conner Unpubl.)	Warm months (Conner Unpubl.)	None
Negaprion brevirostris (Poey) Lemon Shark	Carnivore; predator/scavenger; (Bigelow and Schroeder 1948)	Demersal; see above entry (Conner Unpubl.)	Rare; warm months (Conner Unpubl.)	None
Rhizoprionodon terranovae (Richardson) Atlantic Sharpnose Shark	Carnivore; predator of small fishes, invertebrates (Bigelow and Schroeder 1948)	Demersal; see above entry	See above entry	None
FAMILY SPHYRNIDAE HAMMERHEAD SHARKS				
Sphyrna tiburo (Linnaeus) Bonnethead	Carnivore; predator/scavenger; mainly macroinvertebrates (Bigelow and Schroeder 1948)	Demersal; mainly along shoreline (Bigelow and Schroeder 1948)	Locally abundant; mainly warm months (Conner Unpubl.)	None

continued

Appendix 6.3(30). Continued.

	Trophic Relations	Local Distribution	Relative and Seasonal Abundance	Economic Importance
Sphyrna tudes (Valenciennes) Smalleye Hammerhead	Carnivore; predator, mainly on fishes (Bigelow and Schroeder 1948)	Demersal; occasionally straying into deeper marginal areas from offshore (Conner Unpubl.)	Very rare (Conner Unpubl.)	None
FAMILY PRISTIDAE SAWFISHES				
Pristis pectinata Latham Smalltooth Sawfish	Carnivore; predator on small fishes, benthic macroinvertebrates (Bigelow and Schroeder 1953)	Demersal; usually in very shallow water (Bigelow and Schroeder 1953)	Rare (Conner Unpubl.)	None
Pristis perotteti Muller and Hanle Largetooth Sawfish	see *P. pectinata* entry	see *P. pectinata* entry	Very rare (Conner Unpubl.); near margin of range (Walls 1975)	None
FAMILY RHINOBATIDAE GUITARFISHES				
Rhinobatos lentiginosus (Garman) Atlantic Guitarfish	Carnivore; predator on benthic invertebrates, fishes (Bigelow and Schroeder 1953)	Demersal; usually in very shallow water (Bigelow and Schroeder 1953)	Very rare (Conner Unpubl.)	None
FAMILY TORPEDINIDAE ELECTRIC RAYS				
Narcine brasiliensis (Ocfers) Lesser Electric Ray	Carnivore; predator on benthic invertebrates (chiefly polychaetes) (Bigelow and Schroeder 1953)	Demersal; mainly on sand bottoms (Walls 1975)	Rare; occasionally taken in shrimp trawls (Conner Unpubl.)	None
FAMILY RAJIDAE SKATES				
Raja texana Chandler Roundel Skate	Carnivore predator on benthic invertebrates (Bigelow and Schroeder 1953)	Demersal; deeper marginal areas only (Conner Unpubl.)	Rare; occasionally taken in shrimp trawls (Conner Unpubl.)	None

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Appendix 6.3(30). Continued.

	Trophic Relations	Local Distribution	Relative and Seasonal Abundance	Economic Importance
FAMILY DASYATIDAE STINGRAYS				
Dasyatis americana Hildebrand and Schroeder Southern Stingray	Carnivore; predator on benthic invertebrates (Bigelow and Schroeder 1953)	Demersal; mainly in shallow marginal areas (Bigelow and Schroeder 1953)	Locally abundant at times (Conner Unpubl.)	None
Dasyatis sabina (LeSueur) Atlantic Stingray	see *D. americana* entry	Demersal; widespread (Conner Unpubl.)	Generally abundant (Conner Unpubl.)	None
Dasyatis sayi (LeSueur) Bluntnose Stingray	see *D. americana* entry	Demersal; mainly shallow marginal areas (Bigelow and Schroeder 1953)	Very rare; occasionally taken in trawls (Conner Unpubl.)	None
Gymnura micrura (Bloch and Schnieder) Smooth Butterfly Ray	Carnivore; predator/scavenger or benthic invertebrates (Bigelow and Schroeder 1953)	Demersal; preferring sandy bottoms (Bigelow and Schroeder 1953)	Very rare; sometimes taken in trawls in warm months (Conner Unpubl.)	None
FAMILY MYLIOBATIDAE EAGLE RAYS				
Aetobatus narinari (Euphrasen) Spotted Eagle Ray	Carnivore; predator mainly on bivalves (Bigelow and Schroeder 1953)	Demersal; widespread (Bigelow and Schroeder 1953)	Mainly warm months (Conner Unpubl.)	None sometimes damage mollusk beds (Bigelow and Schroeder 1953)
Rhinophtera bonasus (Mitchill) Cownose Ray	see *Aetobatus* entry	Demersal; widespread (Bigelow and Schroeder 1953)	Rare; mainly warm months	None
FAMILY MOBULIDAE MANTAS				
Manta birostris (Walbaum) Atlantic Manta	Carnivore; predator on fishes, macroinvertebrates (Bigelow and Schroeder 1953)	Pelagic;	Rare; sporadic; strays from open Gulf (Conner Unpubl.)	None

continued

Appendix 6.3(30). Continued.

	Trophic Relations	Local Distribution	Relative and Seasonal Abundance	Economic Importance
FAMILY ACIPENSERIDAE STURGEONS				
Acipenser oxyrhynchus Mitchill	Carnivore; sucker-type feeder on benthic invertebrates (Vladykov and Greeley 1963)	Demersal;	Very rare; occasionally taken in shrimp trawls (Conner Unpubl.)	None
Atlantic Sturgeon				
FAMILY LEPISOSTEIDAE GARS				
Lepisosteus osseus (Linnaeus)	Carnivore; predator on fishes, macroinvertebrates (Suttkus 1963)	Pelagic;	Very rare; occasionally near tidal passes, after freshets; mainly brackish, freshwater form (Conner Unpubl.) (Suttkus 1963)	None
Longnose Gar				
Lepisosteus spatula Lacepede	Carnivore; predator/scavenger on fishes, larger invertebrates -especially mullet, blue crabs (Suttkus 1963) (Darnell 1958)	Pelagic;	Rare; see L. *osseus* entry; this form slightly more common than longnose (Conner Unpubl.)	None
Alligator Gar				
FAMILY ELOPIDAE TARPONS				
Elops saurus Linnaeus Ladyfish - Adults	Carnivore; predator on small fishes, invertebrates (Hildebrand 1963)	Pelagic; mainly along shore (Conner Unpubl.)	Abundant; especially during summer-early fall (Conner Unpubl.)	None
Ladyfish - Young	For larger juveniles see adult entry	Pelagic; widespread as planktonic larvae; for juveniles see adult entry	Abundant as larvae (spring) (Conner Unpubl.) larger juveniles moderately abundant - late summer-fall (Conner Unpubl.)	None
Tarpon				
Megalops atlantica Valenciennes	See Nearshore Gulf entry	See NG entry	See NG entry	

continued

Appendix 6.3(30). Continued.

	Trophic Relations	Local Distribution	Relative and Seasonal Abundance	Economic Importance
FAMILY ANGUILLIDAE FRESHWATER EELS				
Anguilla rostrata (LeSueur) American Eel	Adults carnivorous; predatory on fishes, macroinvertebrates (Bigelow and Schroeder 1953)	Demersal as adults, elvers Planktonic as larvae	Sporadic; mainly pass through area as seasonal (Conner Unpubl.)	None
FAMILY MURAENIDAE MORAYS				
Gymnothorax moringua (Cuvier) Spotted Moray	Carnivore; predator/scavenger on fishes, macroinvertebrates (Winn and Bardash 1959)	Demersal; mainly near reefs, pilings, oil rigs, jetties, wrecks (Conner Unpubl.)	Rare; occasionally taken by trawls, hook and line fishing (Conner Unpubl.)	None
FAMILY CONGRIDAE CONGER EELS				
Maraconger caudilimbatus (Poey) Margintail Conger		Demersal;	Rare; occasionally taken in shrimp trawls (Conner Unpubl.)	None
FAMILY OPHICHTHIDAE SNAKE EELS				
Myrophis punctatus Lutken Speckled Worm Eel - Adults	Carnivore; predator on benthic invertebrates (Springer and Woodburn 1960)	Demersal; widespread (Conner Unpubl.)	Moderately abundant but more so in inland areas (Conner Unpubl.) (Tarbox 1974)	None
Speckled Worm Eel - Young		Larvae planktonic, widespread (Conner Unpubl.) Elvers demersal mainly near passes (Conner Unpubl.)	Abundant, late fall to early spring (Sabins 1973)	None
Mystriophis intertinctus (Richardson) Spotted Spoon-Nose Eel		Demersal; generally in deeper marginal areas (Conner Unpubl.)	Rare; occasionally taken by trawlers (Conner Unpubl.)	None

continued

Appendix 6.3(30). Continued.

	Trophic Relations	Local Distribution	Relative and Seasonal Abundance	Economic Importance
Mystriophis mordax (Poey) Snapper Eel	Carnivore; predator on fishes, macroinvertebrates (Conner Unpubl.)	Demersal; mainly in deeper marginal areas (Conner Unpubl.) (Vladykov and Greeley 1963)	Rare, although not so much as above species; occasionally taken in trawlers and by hook and line (Conner Unpubl.)	None
Ophichthus gomesi (Castlenau) Shrimp Eel - Adults	Carnivore; predator/scavenger on fishes, macroinvertebrates (Conner Unpubl.)	Demersal; widespread	Moderately abundant, often taken in trawls (Conner Unpubl.)	None
Shrimp Eel - Young		Larvae plantonic, widespread (Conner Unpubl.)	Probably abundant seasonally - no local data	None
FAMILY CLUPEIDAE HERRINGS				
Alosa chrysochloris (Rafinesque) Skipjack Herring	Carnivore; predator on fishes, neustonic invertebrates (Conner Unpubl.) (Hildebrand 1963)	Pelagic; mainly in low salinity to fresh (Conner Unpubl.)	Rare; primarily freshwater form (Conner Unpubl.)	None
Brevoortia gunteri Hildebrand	Omnivore; strainer of plankton (Hildebrand 1963) -forage species	Pelagic; most schools farther offshore (Conner Unpubl.)	Relatively rare; mainly found farther offshore (Conner Unpubl.)	Minor component of menhaden fishery
Brevoortia patronus Goode Gulf Menhaden				
Dorosoma cepedianum (LeSueur) Gizzard Shad	Omnivore; strainer/grazer of plankton, detritus (Darnell 1958) (Miller 1963)	Pelagic; see skipjack herring entry	See skipjack herring entry	None
Dorosoma petenense (Gunther) Threadfin Shad	Omnivore; strainer of plankton (Miller 1963)	Pelagic; see skipjack herring entry	See skipjack herring entry	None

continued

Appendix 6.3(30). Continued.

	Trophic Relations	Local Distribution	Relative and Seasonal Abundance	Economic Importance
FAMILY SYNODONTIDAE LIZARDFISHES				
Synodus foetens (Linnaeus) Inshore Lizardfish - Adults	Carnivore; predator, mainly on fishes (Anderson, Gehringer and Berry 1966) (Springer and Woodburn 1960)	Demersal, widespread except along beaches (Conner Unpubl.) (Tarbox 1974)(Perret, Barret, Latapie, Pollard, Mock, Adkins, Gaidry and White 1971)	Abundant, especially in shrimp trawls; may move offshore in winter (Gunter 1945) (Moore, Brusher and Trent 1970)	Minor component of industrial bottomfish catch-primarily farther offshore (Moore, Brusher and Trent 1970)
Inshore Lizardfish - Young	Carnivore; predator on zooplankton, including larval fishes (Anderson, Gehringer and Berry 1966)	Larvae planktonic, juveniles demersal	Moderately abundant in summer (Tarbox 1974)	None
FAMILY ARIDAE SEA CATFISHES				
Arius felis (Linnaeus) Sea Catfish - Adults	Omnivore; grazer/scavenger type feeder on carrion, detritus (Darnell 1958) (Springer and Woodburn 1960)	Demersal; widespread (Conner Unpubl.)	Abundant, especially in warm months (Gunter 1945)	8-10% of industrial bottomfish catch (Moore, Brusher and Trent 1970) -considered nuisance by anglers
Sea Catfish - Young		Larvae and postlarvae orally incubated by male; juveniles as adults	See adult entry	None
Bagre marinus (Mitchill) Gafftopsail Catfish	Omnivore; essentially as above species (Reid, Inglis and Hoese 1956)	Demersal; widespread (Conner Unpubl.)	Essentially as in sea catfish but more restricted to warm months; offshore movement in winter (Gunter 1945)	Minor component of industrial bottomfish catch (generally not distinguished from *Arius felis* in statistics.

continued

Appendix 6.3(30). Continued.

	Trophic Relations	Local Distribution	Relative and Seasonal Abundance	Economic Importance
Harengula pensacolae Goode and Bean Scaled Sardine - Adults	Omnivore; plankton strainer (Rivas 1963) -forage species	Pelagic; schooling near surface, widespread (Conner Unpubl.) (Rivas 1963)	Often abundant, especially during warm months (Conner Unpubl.)	None
Scaled Sardine - Young		Larvae planktonic; mainly farther offshore; juveniles essentially as adults	Juveniles abundant along beaches-summer and fall (Tarbox 1974) (Conner Unpubl.); main larval concentrations farther offshore (Sabins 1973) (Hoese 1965), spring and summer (Sabins 1973)	None
Opisthonema oglinum (LeSueur) Atlantic Thread Herring	Omnivore; plankton strainer (Hildebrand 1963)	Pelagic; schooling near surface; mainly farther offshore (Conner Unpubl.)	Rare, occasionally taken along beaches during warm months (Conner Unpubl.)	None
FAMILY ENGRAULIDAE ANCHOVIES				
Anchoa hepsetus (Linnaeus) Striped Anchovy - Adults	Carnivore; predator on small fishes, invertebrates (Hildebrand 1963) (Springer and Woodburn 1960)	Pelagic; widespread in schools (Conner Unpubl.)	Abundant, especially in warm months (Conner Unpubl.) (Tarbox 1974)	None
Striped Anchovy - Young	-forage fish	Larvae planktonic; widespread; juveniles as adults (Conner Unpubl.)	Abundant, spring to early autumn (Conner Unpubl.) (Sabins 1973) (Tarbox 1974) (Perret, Barret, Latapie, Pollard, Mock, Adkins, Gaidry, and White 1971)	None
Anchoa lyolepis (Evermann and Marsh) Dusky Anchovy		Pelagic;	*Rare; occasionally appear as juveniles in summer (Conner Unpubl.)(Sabins 1973)	None
Anchoa mitchilli (Valenciennes) Bay Anchovy - Adults	Carnivore; predator on fishes, invertebrates (Hildebrand 1963)(Darnell 1958) -forage species	Pelagic; widespread in schools (Conner Unpubl.) (Hildebrand 1963)	Very abundant, especially in warmer months (Conner Unpubl.) (Perret, Barret, Latapie, Pollard, Mock, Adkins, Gaidry and White 1971)	None
Bay Anchovy - Young	Carnivore; predator on zooplankton (chiefly copepods) (Hildebrand 1963)	Larvae planktonic, widespread; juveniles as adults	Present year-round, abundant; peak catches usually in summer (Sabins 1973) (Tarbox 1974) (Perret, Barret, Latapie, Pollard, Mock, Adkins, Gaidry and White 1971)	None

continued

Appendix 6.3(30). Continued.

	Trophic Relations	Local Distribution	Relative and Seasonal Abundance	Economic Importance
FAMILY SYNODONTIDAE LIZARDFISHES				
Synodus foetens (Linnaeus) Inshore Lizardfish - Adults	Carnivore; predator, mainly on fishes (Anderson, Gehringer and Berry 1966) (Springer and Woodburn 1960)	Demersal, widespread except along beaches (Conner Unpubl.) (Tarbox 1974) (Perret, Barret, Latapie, Pollard, Mock, Adkins, Gaidry and White 1971)	Abundant, especially in shrimp trawls; may move offshore in winter (Gunter 1945) (Moore, Brusher and Trent 1970)	Minor component of industrial bottomfish catch-primarily farther offshore (Moore, Brusher and Trent 1970)
Inshore Lizardfish - Young	Carnivore; predator on zooplankton, including larval fishes (Anderson, Gehringer and Berry 1966)	Larvae planktonic, juveniles demersal	Moderately abundant in summer (Tarbox 1974)	None
FAMILY ARIDAE SEA CATFISHES				
Arius fellis (Linnaeus) Sea Catfish - Adults	Omnivore; grazer/scavenger type feeder on carrion, detritus (Darnell 1958) (Springer and Woodburn 1960)	Demersal; widespread (Conner Unpubl.)	Abundant, especially in warm months (Gunter 1945)	8-10% of industrial bottomfish catch (Moore, Brusher and Trent 1970) -considered nuisance by anglers
Sea Catfish - Young		Larvae and postlarvae orally incubated by male; juveniles as adults	See adult entry	None
Bagre marinus (Mitchill) Gafftopsail Catfish	Omnivore; essentially as above species (Reid, Inglis and Hoese 1956)	Demersal; widespread (Conner Unpubl.)	Essentially as in sea catfish but more restricted to warm months; offshore movement in winter (Gunter 1945)	Minor component of industrial bottomfish catch (generally not distinguished from *Arius felis* in statistics)
FAMILY BATRACHOIDIDAE TOADFISHES				
Opsanus beta (Goode and Bean) Gulf Toadfish	Carnivore; predator on fishes, macroinvertebrates (Springer and Woodburn 1960)	Demersal; mainly associated with pilings, jetties, shell reefs (Conner Unpubl.)	Locally abundant, see habitat entry, especially around reefs (Conner Unpubl.)	None

continued

Appendix 6.3(30). Continued.

	Trophic Relations	Local Distribution	Relative and Seasonal Abundance	E Economic Importance
Porichthys porosissimus (Valenciennes) Atlantic Midshipman	Carnivore; predator on mysids, amphipods, small fishes (Gilbert 1968)	Demersal; widespread burrowing in substrate during day (Conner Unpubl.) (Gilbert 1968)	Relatively sparse; main concentrations farther offshore; taken mainly in shrimp trawls; cryptic and nocturnal (Adams 1960)	None
FAMILY GOBIESOCIDAE CLINGFISHES				
Gobiesox strumosus Cope Skilletfish		Demersal; see Gulf toadfish entry	See Gulf toadfish entry	None
FAMILY ANTENNARIIDAE FROGFISHES				
Histrio histrio (Linnaeus) Sargassumfish	Carnivore; predator on small fish, invertebrates (Adams 1960)	Pelagic; associated with floating clumps of sargassum (Adams 1960)	Sparse	None
FAMILY OGCOCEPHALIDAE BATFISHES				
Ogeocephalus radiatus (Mitchill) Polka-Dot Batfish		Demersal; mainly in deeper marginal areas (Conner Unpubl.)	Sparse	None
FAMILY BREGMACEROTIDAE COTLETS				
Bregmaceros atlanticus Goode and Bean Antenna Codlet		Demersal; deeper marginal areas only (Conner Unpubl.)	Sparse	None

continued

Appendix 6.3(30). Continued.

	Trophic Relations	Local Distribution	Relative and Seasonal Abundance	Economic Importance
FAMILY GADIDAE CODFISHES				
Urophysis floridanus (Bean and Dresel) Southern Hake	Carnivore; predator on small fishes, invertebrates (Springer and Woodburn 1960)	Demersal; widespread but mainly in deeper areas except during onshore winter movement (Gunter 1945) (Conner Unpubl.)	Moderately abundant during cold months (Gunter 1945) (Conner Unpubl.)	None
FAMILY OPHIDIIDAE CUSK-EELS AND BROTULAS				
Ophidion welshi (Nichols and Breder) Crested Cusk-Eel		Demersal; widespread (Walls 1975)	Sparse; occasionally taken in shrimp trawls (Conner Unpubl.)	None
FAMILY EXOCOETIDAE FLYINGFISHES AND HALFBEAKS				
Cypselurus exsiliens (Linnaeus) Bandwing Flyingfish		Pelagic; adults usually farther offshore; larvae occasionally wash near shore (Walls 1975) (Conner Unpubl.)	Sparse	None
Cypselurus furcatus (Mitchill) Spotfin Flyingfish		Same as bandwing flyingfish	Same as bandwing flyingfish	None
Hyporhamphus unifasciatus (Ranzani) Halfbreak	Omnivore; invertebrates and detritus (Hildebrand and Schroeder 1928)	Pelagic; widespread (Conner Unpubl.)	Moderately abundant, mainly during warm months (Conner Unpubl.)	None
FAMILY BELONIDAE NEEDLEFISHES				
Strongylura marina (Walbaum) Atlantic Needlefish	Carnivore; predator on fishes, macroinvertebrates (Darnell 1958) (Springer and Woodburn 1960) (Hildebrand and Schroeder 1928)	Pelagic; widespread (Conner Unpubl.)	Abundant, especially in warm months and mainly along shorelines (Conner Unpubl.) (Perret, Barret, Latapie, Pollard, Mock, Adkins, Gaidry and White 1971)	None

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Appendix 6.3(30). Continued.

	Trophic Relations	Local Distribution	Relative and Seasonal Abundance	Economic Importance
FAMILY CYPRINODONTIDAE KILLIFISHES				
Cyprinodon variegatus Lacepede Sheepshead Minnow	Omnivore; primarily herbivorous; grazer on epiphytic algae and invertebrates (Springer and Woodburn 1960) -forage species	Edge zone mainly; rarely outside inland areas (Conner Unpubl.)	Sparse, occasionally taken along beaches (Conner Unpubl.)	None
Fundulus grandis Baird and Girard Gulf Killifish	Omnivore; primarily carnivorous; grazer (predator on small invertebrates, carrion (Springer and Woodburn 1960) (Darnell 1958) -forage species	Same as sheepshead minnow	Same as sheepshead minnow	None
Fundulus similis (Baird and Girard) Longnose Killifish	Omnivore; see Gulf killifish entry -forage species	Along beaches (Conner Unpubl.)	Locally abundant; most common of killifishes outside of inland areas (Conner Unpubl.)	None
Lucania parva (Baird) Rainwater Killifish	Carnivore; predator (grazer on invertebrates (Hildebrand and Schroeder 1928)	Same as sheepshead minnow	Same as sheepshead minnow	None
FAMILY POECILIIDAE LIVEBEARERS				
Gambusia affinis (Baird and Girard) Mosquitofish	Carnivore; predator (grazer on small invertebrates, especially insect larvae -forage species	Same as sheepshead minnow	Same as sheepshead minnow	None
Poecilia latipinna (LeSueur) Salfin Molly	Omnivore; primarily herbivores; grazer on epiphytic algae, detritus (Springer and Woodburn 1960) -forage species	Same as sheepshead minnow	Same as sheepshead minnow	None

continued

Appendix 6.3(30). Continued.

	Trophic Relations	Local Distribution	Relative and Seasonal Abundance	Economic Importance
FAMILY ATHERINIDAE SILVERSIDES				
Membras martinica (Valenciennes) Rough Silverside	Carnivore; predator on small invertebrates (Robbins 1969) -forage fish	Pelagic; surface schooler; mainly along shorelines (Robbins 1969)	Abundant along shore, expecially summer and fall (Gunter 1945)	None
Menidia beryllina (Cope) Tidewater Silverside	Carnivore; predator/grazer on zooplankton, other small invertebrates (Springer and Woodburn 1960) (Darnell 1958) (Robbins 1969)	Same as rough silverside	Same as rough silverside (Gunter 1945) (Conner Unpubl.)	None
FAMILY SYNGNATHIDAE PIPEFISHES AND SEAHORSES				
Syngnathus louisianae Gunther Chain Pipefish	Carnivore; predator on small invertebrates (Conner Unpubl.)	Associated with submerged and emergent plants; mainly in inland areas (Conner Unpubl.)	Very rare, as strays from inland areas (Conner Unpubl.)	None
Syngnathus scovelli (Evermann and Kendall) Gulf Pipefish	Carnivore; predator on small invertebrates (copepods, amphipods, small decapods) (Soringer and Woodburn 1960)	Same as chain pipefish (Conner Unpubl.)	Same as chain pipefish	None
FAMILY PERCICHTHYIDAE TEMPERATE BASSES				
Morone saxatilis (Walbaum) Striped Bass	Carnivore; voracious predator on small fishes	Pelagic, mainly in inland areas (Conner Unpubl.)	Very rare; occasional strays enter nearshore Gulf, presumably from TPWD or LWFC inland stocking programs (Conner Unpubl.)	Limited value as gamefish
FAMILY SERRANIDAE SEA BASSES				
Centropristis philadelphica (Linnaeus) Rock Sea Bass	Carnivore; predator on small fishes, benthic invertebrates	Demersal; mainly in deeper marginal areas (Walls 1975) (Moore, Brusher, and Trent 1970) (Conner Unpubl.)	Sparse; occasionally taken by shrimp trawls (Conner Unpubl.)	None, locally (farther offshore is minor component of industrial bottomfish catch (Moore, Brusher and Trent 1970)

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Appendix 6.3(30). Continued.

	Trophic Relations	Local Distribution	Relative and Seasonal Abundance	Economic Importance
Serranus subligarius (Cope) Belted Sandfish		Demersal; deeper areas only (Conner Unpubl.)	Rare; occasionally taken by shrimp trawls (Conner Unpubl.)	None
FAMILY POMATOMIDAE BLUEFISHES				
Pomatomus saltatrix (Linnaeus) Bluefish	Carnivore; voracious predator on fishes, macroinvertebrates (Bigelow and Schroeder 1953)	Pelagic; normally in more offshore areas but often moving inshore in large aggregations (Conner Unpubl.) (Bigelow and Schroeder 1953)	Sporadically abundant (Conner Unpubl.)	Limited value as gamefish
FAMILY RACHYCENTRIDAE COBIAS				
Rachycentron canadum (Linnaeus) Cobia	Carnivore; predator on fishes, macroinvertebrates (especially blue crabs) (Knapp 1950) (Gowanloch 1933)	Pelagic; normally in more offshore areas (Gowanloch 1933) (Walls 1975)	Sparse; sometimes moving into area (mainly warm months) (Conner Unpubl.)	Limited value as gamefish
FAMILY ECHENEIDAE REMORAS				
Echeneis naucrates Linnaeus Sharksucker	Carnivore; predator/grazer on invertebrates, carrion	Pelagic/demersal; with sharks, other large fishes (Walls 1975)	Sparse; occasionally follow sharks near shore (Conner Unpubl.)	None
Remora remora (Linnaeus) Remora	Same as sharksucker	Same as sharksucker	Same as sharksucker	None

continued

Appendix 6.3(30). Continued.

	Trophic Relations	Local Distribution	Relative and Seasonal Abundance	Economic Importance
FAMILY CARANGIDAE JACKS				
Caranx crysos (Mitchill) Blue Runner	Carnivore; voracious predator on fishes, macro-invertebrates (Conner Unpubl.)	Pelagic; mainly in deeper areas farther offshore (Walls 1975)	Sparse; occasionally moving in from deeper zones (Conner Unpubl.)	Limited value on gamefish
Caranx hippos (Linnaeus) Crevalle Jack	See blue runner entry (Hildebrand and Schroeder 1928)	Pelagic; mainly in deeper areas but often moving inshore; often around pilings, rigs (Conner Unpubl.)	Moderately abundant (especially warm months) (Conner Unpubl.)	Limited value as gamefish
Caranx latus Agassiz Horse-eye Jack	See blue runner entry (Conner Upubl.)	See blue runner entry	Rare	Limited value as gamefish
Chloroscombrus chrysurus (Linnaeus) Atlantic Bumper		Demersal, widespread (Gunter 1945)	Moderately abundant in shrimp trawls, especially in summer (Conner Unpubl.)	Minor component of industrial bottomfish catch farther offshore (Moore, Brusher and Trent 1970)
Oligoplites saurus (Bloch and Schneider) Leatherjacket	Carnivore; predator on small fishes, invertebrates (Wagner 1973) (Hildebrand and Schroeder 1928) (Springer and Woodburn 1960)	Pelagic; adults normally in deeper areas farther offshore (Gunter 1945) young widespread	Moderately abundant; warm months (Perret, Berret, Latapie, Pollard, Mock, Adkins, Gaidry and White 1971)(Gunter 1945) as juveniles	None
Selene vomer (Linnaeus) Lookdown	Carnivore; predator on small crustaceans, fish (Hildebrand and Schroeder 1928)	Pelagic; adults mainly in deeper areas; often near oil rigs (Walls 1975)	Adults sparse; young moderately abundant during summer (Conner Unpubl.)	None
Trachinotus carolinus (Linnaeus) Florida Pompano	Carnivore; predator/grazer on fishes, benthic invertebrates (Springer and Woodburn 1960) (Hildebrand and Schroeder 1928)	Pelagic; adults mainly in deeper areas; sometimes around oil rigs; young often move into shore areas (Springer and Woodburn 1960)(Walls 1975) (Conner Unpubl.)	Sparse as adults; locally abundant as young (shore zones, warm months) (Bellinger and Avault 1971)	Limited value as gamefish

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Appendix 6.3(30). Continued.

	Trophic Relations	Local Distribution	Relative and Seasonal Abundance	Economic Importance
Trachinotus falcatus (Linnaeus) Permit	Carnivore; mainly on benthic invertebrates (Springer and Woodburn 1960) (Hildebrand and Schroeder 1928)	Pelagic; adults mainly in deeper areas (Walls 1975)	Sparse as adults; juveniles occur along beaches in autumn (Sabins 1973) (Tarbox 1974) (Conner Unpubl.)	None
Vomer setapinnis (Mitchill) Atlantic	Carnivore; predator chiefly on fishes (Hildebrand and Schroeder 1928)	Pelagic; widespread adults mainly in deeper areas (Walls 1975)	Moderately abundant, especially as juveniles in warm months (Conner Unpubl.)	None
FAMILY CORYPHAENIDAE DOLPHINS				
Coryphaena hippurus Linnaeus Dolphin	Carnivore; predator on fish, macroinvertebrates	Pelagic; adults mainly in deeper areas farther offshore; larvae occasionally washed into nearshore area (Conner Unpubl.)	Rare; sometimes moving into shallow areas (Conner Unpubl.)	Limited value as gamefish
FAMILY LUTJANIDAE SNAPPERS				
Lutjanus griseus (Linnaeus) Gray Snapper	Carnivore; predator on fishes, macroinvertebrates (Springer and Woodburn 1960) (Longley and Hildebrand 1941)	Demersal; mainly over reefs and near pilings, jetties, wrecks, oil rigs	Rare; young occasionally move near shore and to bays (Conner Unpubl.)	Limited value as gamefish (mainly farther offshore)
Lutjanus synagris (Linnaeus) Lane Snapper	Same as gray snapper	Demersal; mainly in deeper areas farther offshore; over reefs and near pilings, wrecks, rigs	Rare; young occasinally move into shallow areas (Conner Unpubl.)	Same as gray snapper

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Appendix 6.3(30). Continued.

	Trophic Relations	Local Distribution	Relative and Seasonal Abundance	Economic Importance
FAMILY LOBOTIDAE TRIPLETAILS				
Lobotes surinamensis (Bloch) Tripletail		Pelagic; mainly near pilings, jetties, oil rigs, buoys, wrecks	Sparse; solitary as adults, young often found near shore (Conner Unpubl.)	Limited value as gamefish
FAMILY GERREIDAE MOJARRAS				
Eucinostromus argenteus Baird and Girard Spotfin Mojarra	Carnivore; predator/grazer on benthic invertebrates (Springer and Woodburn 1960) - forage species	Pelagic; widespread; young along beach (Conner Unpubl.)	Locally abundant as young along beach in warm months (Conner Unpubl.)	None
FAMILY POMADASYIDAE GRUNTS				
Conodon nobilis (Linnaeus) Barred Grunt		Demersal; mainly in deeper marginal areas (Springer and Bullis 1956) (Conner Unpubl.)	Rare; occasionally taken in shrimp trawls (Conner Unpubl.)	None
Orthopristis chrysoptera (Linnaeus) Pigfish	Carnivore; predator/grazer on benthic invertebrates (Springer and Woodburn 1960) (Hildebrand and Schroeder 1928)	Demersal; widespread in near shore Gulf (Walls 1975) (Conner Unpubl.) (Springer and Bullis 1956)	Abundant; mainly during colder months (Conner Unpubl.)	None
FAMILY SPARIDAE PORGIES				
Archosargus probatocephalus (Walbaum) Sheepshead	Omnivore; grazer/predator on periphyton, macroinvertebrates (especially barnacles, hermit crabs) (Hildebrand and Cable 1938) (Carsen 1944) (Pullen 1962) (Hildebrand Schroeder 1928)	Pelagic; adults associated with pilings, jetties, wrecks, oil rigs, young mainly in inland areas (Hildebrand and Cable 1938) (Conner Unpubl.)	Moderately abundant as adults; see habitat entry (Conner Unpubl.)	Popular gamefish; minor value as commercial fish

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Appendix 6.3(30). Continued.

	Tropic Relations	Local Distribution	Relative and Seasonal Abundance	Economic Importance
Labodon rhomboides (Linnaeus) Pinfish	Omnivore; predator/ grazer on fishes, detritus, invertebrates, algae (Hildebrand and Schroeder 1928) - forage fish	Demersal; widespread (Walls 1975) (Gunter 1945) (Gunter 1938)	Abundant often taken by trawls, seines, hook and line (1) (Conner Unpubl.)	Limited value as gamefish; generally required a nuisance by anglers
Stenotomus caprinus (Bean) Longsping Porgy	Carnivore; predator on small fishes, benthic invertebrates (inferred from data on Atlantic congener) (Hildebrand & Schroeder 1928)	Demersal; mainly in deeper areas farther offshore (Moore, Brusher and Trent 1970) (Gunter 1945) (Gunter 1938) (Walls 1975)	Sparse; see habitat entry	Approx. 5% of winter industrial bottomfish catch; much more important farther offshore, year-round (Moore, Brusher & Trent 1970)
FAMILY SCIAENIDAE DRUMS				
Bairdiella chrysura (Lacepede) Silver Perch	Carnivore; adults predatory on small fishes, shrimps; young feed on zooplankton (Springer and Woodburn, 1960) (Darnell 1958)	Demersal; mainly in inland areas (Gunter 1945)	Moderately abundant during winter (Gunter 1945)	Minor component of industrial bottomfish catch (Moore, Brusher, and Trent 1970)
Cynoscion arenarius (Ginsburg) Sand Seatrout	Carnivore; predator on fishes, macroinvertebrates (Darnell 1958) (Springer and Woodburn 1960) (Reid, Inglis, and Hoese 1956) (Hildebrand 1954)	Demersal; widespread; mainly in inland areas except during cold months (Gunter 1945) (Norden 1966) (Gunter 1938)	Moderately abundant during cold months; see habitat entry	Approx. 6 - 8% of industrial bottomfish catch in spring and summer (Moore, Brusher and Trent 1970)
Cynoscion nebulosus (Cuvier) Spotted Seatrout				
Cynoscion nothus (Holbrook) Silver Seatrout - Adults	carnivore; predator on fishes, macroinvertebrates	Demersal; mainly in deeper areas farther offshore (Moore, Brusher & Trent 1970) (Gunter 1938)	Sparse; see habitat entry	Minor component of industrial bottomfish catch farther offshore (Moore, Brusher & Trent 1970); popular gamefish farther offshore
Silver Seatrout - Young		Eggs and larvae planktonic; juveniles demersal; mainly in deeper areas farther offshore but occasionally entering nearshore Gulf (Hoese 1965)		None

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Appendix 6.3(30). Continued.

	Trophic Relations	Local Distribution	Relative and Seasonal Abundance	Economic Importance
Larimus faciatus (Holbrook) Banded Drum		Demersal; widespread but mainly in deeper areas farther offshore (Hildebrand and Cable 1934) (Gunter 1941)	Sparse; occasionally taken in shrimp trawls (Conner Unpubl.)	None
Leiostomus xanthurus (Lacepede) Spot - Adults	Omnivore; primarily carnivorous, grazer on benthic invertebrates, detritus (Springer and Woodburn 1960) (Hildebrand and Schroeder 1928)	Demersal; widespread; moving offshore in fall (Moore, Busher, and Trent 1970) (Pearson 1929)	Moderately abundant, mainly in spring and summer (Moore, Busher, and Trent 1970)	Approx. 5 - 7% of industrial bottomfish catch in spring and summer (Moore, Busher, & Trent 1970), moderately valuable as gamefish
Spot - Young	Omnivore; primarily carnivorous; predatory on zooplankton; grazer on detritus (Darnell 1958) (Springer and Woodburn 1960)	Eggs and larvae planktonic; juveniles demersal (Conner Unpubl.) Eggs and larvae widespread seasonally (Conner Unpubl.); juveniles mainly in inland areas (Parker 1971)	Moderately abundant, late fall to early spring (Gunter 1945) (Tarbox 1974)	None
Menticirrhus americanus (Linnaeus) Southern Kingfish - Adults	Carnivore; predator/grazer on benthic invertebrates (Springer and Woodburn 1960) (Hildebrand and Schroeder 1928) (Miles 1949)	Demersal; widespread (Gunter 1945)	Moderately abundant; especially during summer and fall (Gunter 1945) (Conner Unpubl.)	Approx. 7% of winter industrial bottomfish catch (Moore, Busher and Trent 1970); minor value as gamefish
Southern Kingfish - Young	Carnivore; bottom-feeders in very shallow areas (Springer and Woodburn 1960) -forage species	Demersal; mainly along beaches (Springer and Woodburn 1960)	Abundant; mainly along beaches in summer, fall (Conner Unpubl.)	None
Menticirrhus littoralis (Holbrook) Gulf Kingfish	See above species (Springer and Woodburn 1960) (Hildebrand and Schroeder 1928) (Gunter 1945)	Demersal, mainly along beaches (Gunter 1945)	Moderately abundant, especially during summer (Conner Unpubl.)	Limited value as gamefish
Micropogon undulatus (Linnaeus) Atlantic Croaker				

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Appendix 6.3(30). Continued.

	Trophic Relations	Local Distribution	Relative and Seasonal Abundance	Economic Importance
Pogonias cromis (Linnaeus) Black Drun - Adults	Carnivore; predator/grazer on benthic invertebrates, especially bivalve mollusks (e.g. *Mulinia* (Pearson 1929) (Hildebrand and Schroeder 1928)	Demersal; widespread, but mainly in inland areas (Gunter 1945)	Sparse; mainly in inland areas except during offshore spawning migration (winter) (Gunter 1945)	Limited value as gamefish; (more important as both game and commercial fish in inland areas)
Black Drum - Young	Carnivore; predator/grazer on small benthic invertebrates; mainly polychaetes, crustaceans (Darnell 1958)	Larvae planktonic, widespread (Conner Unpubl.) Post larvae and juveniles in inland areas (Gunter 1945) (Springer and Bullis 1956)	Moderately abundant, late winter and spring (Sabins 1973) (Hoese 1965) (Pearson 1929)	None
Sciaenops ocellata (Linnaeus) Red Drum				
Stellifer lanceolatus (Holbrook) Star Drum		Demersal; mainly in deeper areas (Conner Unpubl.)	Sparse; mainly in deeper areas (Conner Unpubl.)	Minor component of industrial bottomfish catch farther offshore (Moore, Busher, and Trent 1970)
FAMILY EPHIPPIDAE SPADEFISHES,				
Chaetodipterus Faber (Broussonet) Atlantic Spadefish - Adults	Omnivore; grazer on attached algae, fouling invertebrates (Hildebrand and Schroeder 1928) (Smith 1907)	Pelagic; mainly associated with pilings, jetties, wrecks, rigs (Gunter 1945) (Conner Unpubl.)	Locally abundant; see habitat entry (Conner Unpubl.)	Limited value as gamefish
Atlantic Spadefish - Young		Pelagic; as very young tend to concentrate along beaches (Conner Unpubl.)	Abundant along beaches in summer (Conner Unpubl.)	None

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Appendix 6.3(30). Continued.

	Trophic Relations	Local Distribution	Relative and Seasonal Abundance	Economic Importance
FAMILY MUGILIDAE MULLETS				
Mugil cephalus Linnaeus Striped Mullet - Adults	Omnivore; predominantly herbivorous (Odum 1970) (Hildebrand and Schroeder 1928) - forage species	Pelagic; widespread (Gunter 1945) (Gunter 1938)	Abundant (Conner Unpubl.) (Gunter 1938)	Minor importance as bait fish
Striped Mullet - Young	Omnivore; predominantly herbivorous as juveniles (Darnell 1958)	larvae planktonic, widespread (Conner Unpubl.); juveniles mainly in inland areas (Conner Unpubl.) (Gunter 1945) (Gunter 1938)	Moderately abundant, December through April (Conner Unpubl.)	None
Mugil curema Valenciennes White Mullet - Adults	See striped mullet entry (Hildebrand and Schroeder 1928)	Pelagic; widespread (Gunter 1945) (Gunter 1938)	Moderately abundant during summer (Conner Unpubl.)	Minor importance as bait fish
White Mullet - Young	See striped mullet entry	Larvae planktonic, widespread (Conner Unpubl.) juveniles mainly in inland areas (Gunter 1945) (Gunter 1938) (Conner Unpubl.)	Moderately abundant; mainly along beaches during summer (Conner Unpubl.)	None
SPHYRAENIDAE BARRACUDAS				
Sphyraena barracuda (Walbaum) Great Barracuda	Carnivore; predator/scavenger on fishes, macroinvertebrates Day, Smith, Wagner and Stowe 1973)	Pelagic; mainly in deeper areas and associated with wrecks, rigs, jetties (Conner Unpubl.)	Sparse; mainly in deeper areas	Limited value as gamefish
FAMILY POLYNEMIDAE THREADFINS				
Polydactylus octonemus (Girard) Atlantic Threadfin	Carnivore; predator on small fishes, invertebrates (Conner Unpubl.) - forage species	Pelagic; widespread (Gunter 1945) (Gunter 1938)	Abundant during warm months (Conner Unpubl.)	None

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Appendix 6.3(30). Continued.

	Trophic Relations	Local Distribution	Relative Abundance	Economic Importance
FAMILY *URANOSCOPIDAE* STARGAZERS				
Astroscopus graecum (Cuvier) Southern Stargazer	Carnivore; predator on fishes, invertebrates (Springer and Woodburn 1960) (Dahlgren 1972)	Demersal; mainly along sandy shore areas (Gunter 1945) (Gunter 1938)	Sparse; occasionally taken in trawls, seines (Conner Unpubl.)	None
FAMILY *BLENNIIDAE* COMBTOOTH BLENNIES				
Chasmodes bosquianus (Lacepede) Striped Benny	Carnivore; predator on benthic invertebrates (inferred from data on eastern Gulf congener) (Springer and Woodburn 1960)	Demersal; mainly associated with reefs, jetties (Conner Unpubl.)	Very rare; cryptic; occasionally taken in trawls (Conner Unpubl.)	None
Hypsoblennius hentzi (LeSueur) Feather Blenny	Omnivore; grazer on hydroids, plants, polychaetes, crustaceans (Springer and Woodburn 1960)	Demersal; mainly associated with muddy reefs (Walls 1975)	Sparse; cryptic; occasionally taken in trawls, seines (Conner Unpubl.)	None
Hypsoblennius ionthas (Jordan and Gilbert) Freckled Blenny		Demersal; mainly associated with reefs (Walls 1975)	Very rare; cryptic; rarely taken in tawls, seines (Conner Unpubl.)	None
FAMILY *GOBIIDAE* GOBIES				
Bollmannia communis Ginsburg Ragged Goby		Demersal; mainly in deeper areas farther offshore (Dawson 1969)	Sparse; occasionally taken in shrimp trawls (Conner Unpubl.)	None
Gobioides broussoneti Lacepede Violet Goby		Demersal; widespread but uncommon (Dawson 1969)	Rare; occasionally taken in shrimp trawls (Conner Unpubl.)	None

continued

Appendix 6.3(30). Continued.

	Trophic Relations	Local Distribution	Relative Abundance	Economic Importance
Gobionellus boleosoma (Jordan and Gilbert) Darter Goby		Demersal; mainly in inland areas and near passes (Dawson 1969) (Conner Unpubl.)	Rare; occasionally taken in seines (Conner Unpubl.)	None
Gobionellus hastatus Girard Sharptail Goby	Omnivore; grazer on algae, benthic invertebrates (Springer and Woodburn 1960)	Demersal; mainly in inland areas (Dawson 1969)	Rare; occasionally taken in trawls (Conner Unpubl.)	None
Gobiosoma bosci (Lacepede) Naked Goby	Carnivore; predator/scavenger on benthic invertebrates, carrion (Hildebrand and Schroeder 1928) (Hoese and Hoese 1967)	Demersal; mainly associated with jetties, reefs (Conner Unpubl.)	Rare; occasionally taken in seines (Conner Unpubl.)	None
FAMILY MICRODESMIDAE WORMFISHES				
Microdesmus longipinnis (Weymouth) Pink Wormfish		Demersal; burrowing form in sand, mud substrates (Dawson 1969)	Rare; occasionally taken in seines, trawls (Conner Unpubl.)	None
FAMILY TRICHIURIDAE CUTLASSFISHES				
Trichiurus lepturus Linnaeus Atlantic Cutlassfish	Carnivore; predator mainly on fishes (Hildebrand and Schroeder 1928) (Day, Smith, Wagner and Stowe 1973)	Demersal; widespread (Gunter 1945) (Gunter 1938)	Abundant; especially during warm months (Conner Unpubl.) (Gunter 1938)	Approx. 3% of industrial bottomfish catch (Moore, Brusher and Trent 1970); spring and summer
FAMILY SCOMBRIDAE MACKERELS AND TUNAS				
Scomberomorus maculatus (Mitchill) Spanish Mackerel	Carnivore; predator mainly on fishes (Klima 1959)	Pelagic; adults mainly in deeper areas but moving nearshore at times; young widespread (Gunter 1945) (Gunter 1938)	Adults sparse; see habitat entry; young abundant along beaches in summer (Gunter 1938) (Conner Unpubl.)	Limited value as gamefish

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